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Project Directed by

David J. Eaton

David Gibson

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List of Acronyms and Abbreviations

88mph	African Startup Investment Firm
A4A	Aqua for All
ABET	Accreditation Board for Engineering Technology
ACC	American Chamber of Commerce
AECOM	International Investment Firm
AMD	Advanced Micro Devices
AmCham	American Chamber of Commerce
ANGIN	Angel Investment Network Indonesia
ANSI	American National Standards Institute
APS	Annual Program Statement
ASEAN	Association of Southeast Asian Nations
BCCF	Bandung Creative City Forum
BDV	Bandung Digital Valley
BHTV	Bandung High Tech Valley
BIC	Business Innovation Center
BIL	Blackberry Innovation Lab
BRCK	Portable Wi-Fi Hotspot
C4D	Center 4 Development
CEO	Chief Operating Officer
CIEL	Center for Innovation, Entrepreneurship, and Leadership
CoLab	Portugal International Collaboratory for Emerging Technologies
CPI	Corruption Perception Index
CSR	Corporate Social Responsibility
DFID	Department for International Development
DIV	Development Innovation Ventures
EWEC	East-West Economic Corridor
EU	European Union
FabLab	University of Nairobi Fabrication Laboratory
FDI	Foreign Direct Investment

FP/RH	Family Planning/Reproductive Health
GCG	Global Commercialization Group
GDA	Global Development Alliance
GDP	Gross Domestic Product
GDP/P	Gross Domestic Product Per Capita
GEM	Global Entrepreneurship Monitor
GEPI	Global Entrepreneurship Program Indonesia
GIS	Geographic Information System
GIST	Global Innovation through Science and Technology
GKN	Indonesia's Ministry of Cooperatives/SME National Entrepreneurship Program
GMS	Greater Mekong Sub-region
GRDP	Gross Regional Domestic Product
HE	Honorable Excellency Mwai Kibaki
HELM	Higher Education and Leadership Management
HUBUD	Ubud Co-working Community Space
I-Dev	Business Strategy and Investment Advisory Firm
IBEKA	Institute of Business and Economics at Kerakyatan
iBiz	Strathmore University Business Incubator
IBM	International Business Machines
IC ²	The Institute for Innovation, Creativity, and Capital
ICT	Information, Computers, and Technology
IDE	Integrated Development Environment
IDEA	International Development and Education Alliance
IDEC	Graduate School for International Development and Cooperation at Hiroshima University
iHub	Kenya Business Incubator
IHL	Institute of Higher Learning
IOC	Intelligent Operations Center
IoT	Internet of Things
IP	Intellectual Property
IPPF ARO	International Planned Parenthood Federation Africa Regional Office
IT	Information Technology

ITB	Bandung Institute of Technology
ITS	Surabaya Institute of Technology
JICA	Japan International Cooperation Agency
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KIRDI	Kenya Industrial Research & Development Institute
KOICA	Korean International Cooperation Agency
KShs	Kenyan Shillings Currency
KU	Kenyatta University
LAPSSET	Lamu Port-Southern Sudan-Ethiopia Transport
LBJ	Lyndon B. Johnson School of Public Affairs
LIPI	Indonesian Institute of Science
LPIK	Innovation and Entrepreneurship Development Institute
Ltd.	Private Company
LTER	Long Term Economic Rating
m:lab	East African Business Incubator
M-KOPA	East African Solar Business
M-PESA	Mobile-Based Money Transfer System
M2M	Mobile to Mobile
MCC	Microelectronics and Computer Technology Corporation
MDG	Millennium Development Goals
MIC	Microsoft Innovation Centers
MIL	Microsoft Innovation Lab
MIT	Massachusetts Institute of Technology
MOU	Memorandum of Understanding
MP3EI	Master Plan of Acceleration and Expansion of Indonesia's Economic Development
MWA-KP	Millennium Water Alliance Kenya
MWAK	Millennium Water Alliance
MWAK	Millennium Water Alliance Kenya
myRIO	NI Embedded Hardware Device
NGO	Non-Governmental Organization
NI	National Instruments
NI-AIN	NI Academy & Innovation Nucleus

OVG	Otto-von-Guericke University, Magdeburg
P&G	Procter and Gamble
PACE	Partnering to Accelerate Entrepreneurship
PAU	Pan African University
PEER	Partnerships for Enhanced Engagement in Research
PIVOT	East Africa Startup Competition
PLC	Public Limited Company
PPP	Public-Private Partnerships
QS	Quality System
R&D	Research and Development
RGK	Ronya and George Kozmetsky
RICE	Regional IT Center of Excellence
SAP	German Software Enterprise
SBM	School of Business Management
SCI	School of Computing and Informatics
SEZ	Special Economic Zones
SHERA	Sustainable Higher Education and Research Alliance
SHTP	Saigon Hi-Tech Park
SME	Small and Medium Enterprise
SRH	Sexual and Reproductive Health
SST	Seven Seas Technology Group
STER	Short Term Economic Rating
STPR	Short Term Political Rating
SU	Strathmore University Kenya
SXSW	South by Southwest Festival
TI	Texas Instruments
TM	Trademark
TPM	Technology Park Malaysia Corporation
TTO	Technology Transfer Office
UGM	Gadjah Mada University
UI	User Interface
UNDP	United Nations Development Program

UNESCO	United National Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children’s Fund
UNIDO	United Nations Industrial Development Organization
UNPAR	Parahyangan Catholic University
UoN	University of Nairobi
USADF	United States African Development Fund
USAID	United States Agency for International Development
UT	The University of Texas at Austin
UTEN	University Technology Enterprise Network
UX	User Experience
UXLab	User Experience Lab
VC	Vice Chancellor
WASH	Water Sanitation and Hygiene
WB	World Bank
WBWSP	World Bank Water and Sanitation Program
WHyPGen	Wind Hybrid Power Generation Marketing Development
WMI	Women Who Mentor and Innovate
WPF	Windows Presentation Foundation
WSP	Water Safety Portal
YEP	Young Experts Program

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Foreword

The Lyndon B. Johnson School of Public Affairs has established interdisciplinary research on policy problems as the core of its educational program. A major part of this program is the nine-month policy research project, in the course of which one or more faculty members from different disciplines direct the research of graduate students of diverse backgrounds on a policy issue of concern to a government or nonprofit agency. This “client orientation” brings students face to face with administrators, legislators, and other officials active in the policy process and demonstrates that research in a policy environment demands special talents. It also illuminates the occasional difficulties of relating research findings to the world of political realities.

During 2014-2015, The Lyndon B. Johnson School of Public Affairs (LBJ School) and The Institute for Innovation, Creativity, and Capital (The IC² Institute), in cooperation with National Instruments (NI) unit Planet NI, based in Austin, Texas, conducted two experiments to facilitate technology transfer to encourage entrepreneurship and economic development in Indonesia and Kenya. The “Technology Transfer, Entrepreneurship, and Economic Development” project was designed as an opportunity for graduate students to develop skills as “consultants” to assist a variety of institutions including non-profit organizations, for-profit firms, university research centers, and government agencies in encouraging technology entrepreneurship. Students operated within interdisciplinary teams to provide diverse management consulting services on issues of organizational development, technology innovation and transfer, strategy, marketing, finance, human resources, development, fundraising, and sustainability. These two experiments have sought to enable innovative small and medium-sized enterprises and startups as key contributors to socioeconomic development to generate high-value employment and positively affect local communities within Indonesia and Kenya. Their findings are reported in this report and in accompanying video documentaries.

The curriculum of the LBJ School is intended not only to develop effective public servants but also to produce research that will enlighten and inform those already engaged in the policy process. The project that resulted in this report has helped to accomplish the first task; it is our hope that the report itself will continue to contribute to the second.

Robert Hutchings
Dean

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This research was supported in part by a grant from the Planet NI program at National Instruments to Professor David Eaton, Ph.D. Other sources of support include The Institute for Innovation, Creativity, and Capital (IC²) at UT, the Bess Harris Jones Centennial Professorship in Natural Resource Policy Studies of the Lyndon B. Johnson School of Public Affairs at UT and the RGK Center for Philanthropy, Volunteerism and Nonprofit Management. Graduate students participating in this project were part of the Curtis W. Meadows, Jr. Fellows Program of the RGK Center. The Meadows Fellows Program provides opportunities for graduate students to develop skills as nonprofit consultants in developing nations and the U.S.

Planet NI team members Jimmy Hwang, Eloisa Acha, and Rudi Ngnepi established the goals for this project and advised the graduate students in their research. Mr. Ngnepi accompanied the UT team to meetings in Kenya. Mr. Hwang assisted the UT team to arrange the field visit in Indonesia.

A number of IC² Institute experts associated with technology commercialization and entrepreneurial innovation industries provided information, advice, guidance, and criticism to the class members. David Gibson coordinated their participation. The IC² Institute staff included Bart Bohn, Austin Technology Incubator, Program Manager; Marco Bravo, Project Director, Portugal and Mexico; Debra Dzwonczyk, Assistant Director, Global Commercialization Group; Elise Echeverri-Carroll Ph.D., Senior Research Scientist; Chris Myers, Project Director, Portugal; Greg Pogue, Deputy Director; Glen Robinson, Program Manager, Global Commercialization Group; Barbara Springer, Program Manager, Global Commercialization Group; and Jim Vance, Program Manager, Global Commercialization Group.

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This report does not identify some persons who assisted this project to protect their anonymity. The information presented in this report and its recommendations do not represent the views of any of the institutions cited above, including The LBJ School of Public Affairs, The Institute for Innovation, Creativity, and Capital, The University of Texas at Austin, National Instruments, Planet NI, or any of the other organizations consulted in Indonesia or Kenya. The opinions expressed herein are those of the authors and editors alone, who also are responsible for any errors or omission.

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Executive Summary: Technology Entrepreneurship in Indonesia and Kenya

The Technology Transfer, Entrepreneurship, and Economic Development project was designed as an opportunity for graduate students to develop skills as “consultants” to assist a variety of institutions, including non-profit organizations, for-profit firms, university research centers, and government agencies in encouraging technology entrepreneurship in Indonesia and Kenya. Students operated within interdisciplinary teams to provide diverse management consulting services on issues of organizational development, technology innovation and transfer, strategy, marketing, finance, human resources, development, fundraising, and sustainability. These two experiments have sought to enable innovative small and medium-sized enterprises and startups as key contributors to socioeconomic development to generate high-value employment and positively affect local communities within Indonesia and Kenya. Their findings are reported in this report and in accompanying video photography documentaries.

Planet NI, a unit of National Instruments, financially supported this project through a contract with The University of Texas at Austin. Planet NI also provided advice to class members. National Instruments is a \$1.2 billion international corporation located in Austin, Texas, with 7,100 employees, delivering products to approximately 50 nations and serving 35,000+ customer companies. Since 1976, NI has developed software and hardware that have revolutionized and continue to redefine the way engineers develop systems that require measurement and control. National Instruments equips engineers and scientists with the tools that accelerate productivity, innovation, and discovery. The NI software-based approach incorporates rapidly advancing commercial technology, providing an integrated software and hardware platform that abstracts system complexity and significantly speeds application design, development, and deployment. NI, through its Planet NI program, seeks to encourage the formation of new businesses that use advanced technology in developing nations.

The Indonesia team of graduate consultants sought to establish partnerships with Indonesian government agencies, for-profit firms, not-for-profit firms, and university staff and students for projects/programs where NI tools and expertise could accelerate innovation and discovery among engineers and scientists. A first step was to identify organizations and programs where NI technology could make a difference and co-present a value proposition to partnering organizations. Project deliverables included a report that addresses project outcomes and a documentary video that discusses both project outcomes in parallel to the report as well as how the project experience affected the student consultants. Other Indonesia deliverables included meeting notes and contact information for use by the U.S. partners (Planet NI and two UT units, the IC² Institute and the LBJ School), and a draft conceptual proposal seeking financial support for a specific Indonesian initiative.

The Africa component of this project began with an analysis of opportunities and barriers to technology commercialization in African nations, which led to the selection of Kenya as the focus for technology entrepreneurship. A second step was to identify organizations and programs where NI technology could assist Kenyan entrepreneurs and then co-present a value proposition

to potential partnering institutions. The project deliverables included a report that addresses project outcomes and a documentary video that discusses both project outcomes in parallel to the report as well as how the project experience has affected the student consultants. Other Africa deliverables included a draft Memorandum of Understanding between the University of Nairobi, The Millennium Water Alliance of Kenya, Planet NI, and two UT units, the IC² Institute and the LBJ School, and a draft conceptual proposal seeking financial support for a specific subsequent initiative.

The final deliverables for each of the two national experiments included a written report summarizing results and a documentary video describing the activities of the project, its outcomes, and student self-assessments of their experience in this project. The videos may be useful for NI to distribute to its stakeholders and to persons within Indonesia and Kenya who contributed to this project. Draft conceptual proposals for future funding of projects to implement these ideas are also included.

SECTION I. INDONESIA

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Chapter 1. Technology Entrepreneurship in Indonesia

The purpose of the Indonesia component of this project was to develop ideas to assist local and regional economic development initiatives in Indonesia to create wealth and employment through investment in high technology commercialization projects. This project builds upon Indonesia's national program priorities, along with the potential participation of National Instruments, located in Austin, and two units of The University of Texas at Austin, the IC² Institute and the LBJ School of Public Affairs. This report contains research and project ideas reflecting institutional priorities of each of the institutions and stakeholders. Appendix 1 lists partner descriptions and contact information.

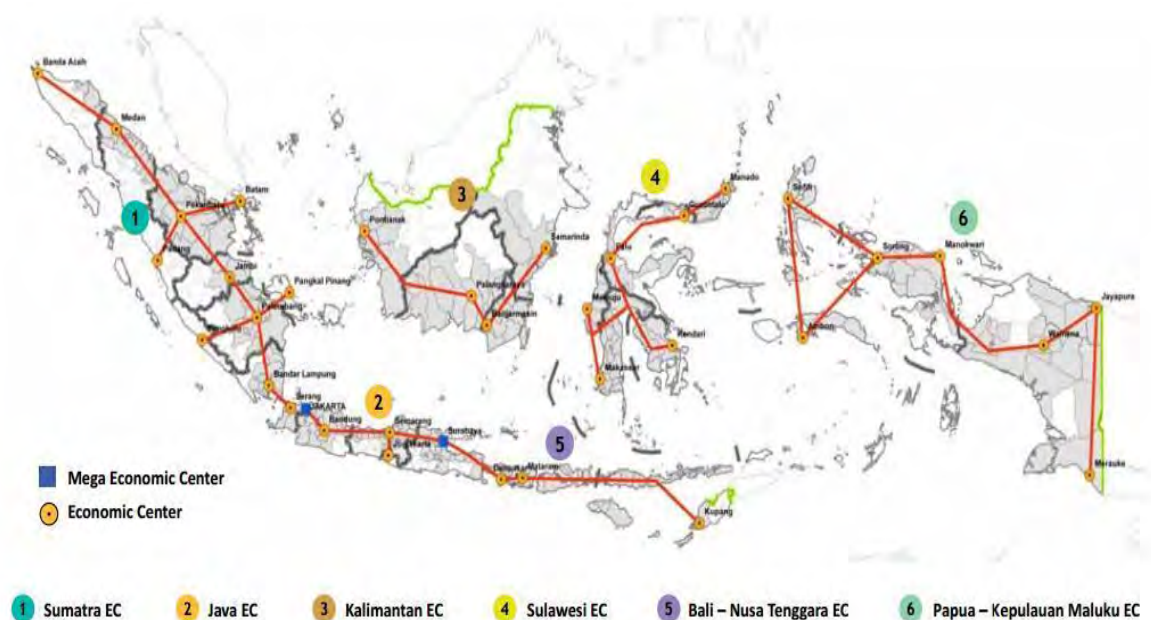
In May 2011, the Indonesian government announced a Master Plan of Acceleration and Expansion of Indonesia's Economic Development (MP3EI) (Indonesia's Economic Development Plan, or the Plan) to improve Indonesia's economic development for diverse regions (see Figure 1.1).¹ The MP3EI focuses on economic development performance measures, such as gross domestic product (GDP) growth, employment levels, and trade account balance. The Plan identifies three steps to transform Indonesia into a top-ten world economy by 2025: 1) building technical capacities among Indonesian entrepreneurs; 2) introducing industry-standard training and certification; and 3) improving access to cutting-edge technology.² It seeks to strengthen regional innovation by providing technology transfer and business development training which may take place through universities, technology parks, or entrepreneurial centers established jointly by local and state governments with private local and foreign firms. The Plan seeks to mobilize regional innovation ecosystems by enabling public-private partnerships through accelerators, non-governmental organizations (NGOs), universities, development agencies, and government organizations.

The Plan proposes economic development within a number of Indonesian Regional Corridors including Sumatra, Java, Kalimantan, Sulawesi, Bali (including Nusa Tenggara), and Papua (including Kepulauan Maluku). According to the Plan, each corridor should increase the value-chain of industrial production processes through natural and human resource development, integrate domestic markets within Indonesia's economic development, and strengthen national innovation systems.³ The Plan asks prospective corridor leaders to enhance human resource capacity, innovate in science and technology, and strengthen connections both within Indonesia and among ASEAN neighbors. Each corridor has specific themes guiding economic development (see Table 1.1). The Plan encourages cooperation among government, private for-profit, and not-for-profit sectors under public-private partnerships. It seeks to enable private investment opportunities to identify and support entrepreneurs and local businesses that can create sustainable employment.

Project staff identified Bandung, Indonesia, as a potential site for program implementation because of its existing vibrant entrepreneurial ecosystem and a regional government enhancing human resources within the Java economic corridor (see Figures 1.2 and 1.3). Appendix 2 restates the Indonesian Ministry of Economic Affairs' plans for Indonesia's economic corridors. The US-based partners (Planet NI and UT) believe that potential local partners exist in Bandung,

including universities, incubators, venture firms, and agencies of local, regional, and national government to assist human capital development and create and sustain technology-based entrepreneurial endeavors.

Figure 1.1.
Map of Master Plan of Acceleration and Expansion of
Indonesia's Economic Development Corridor



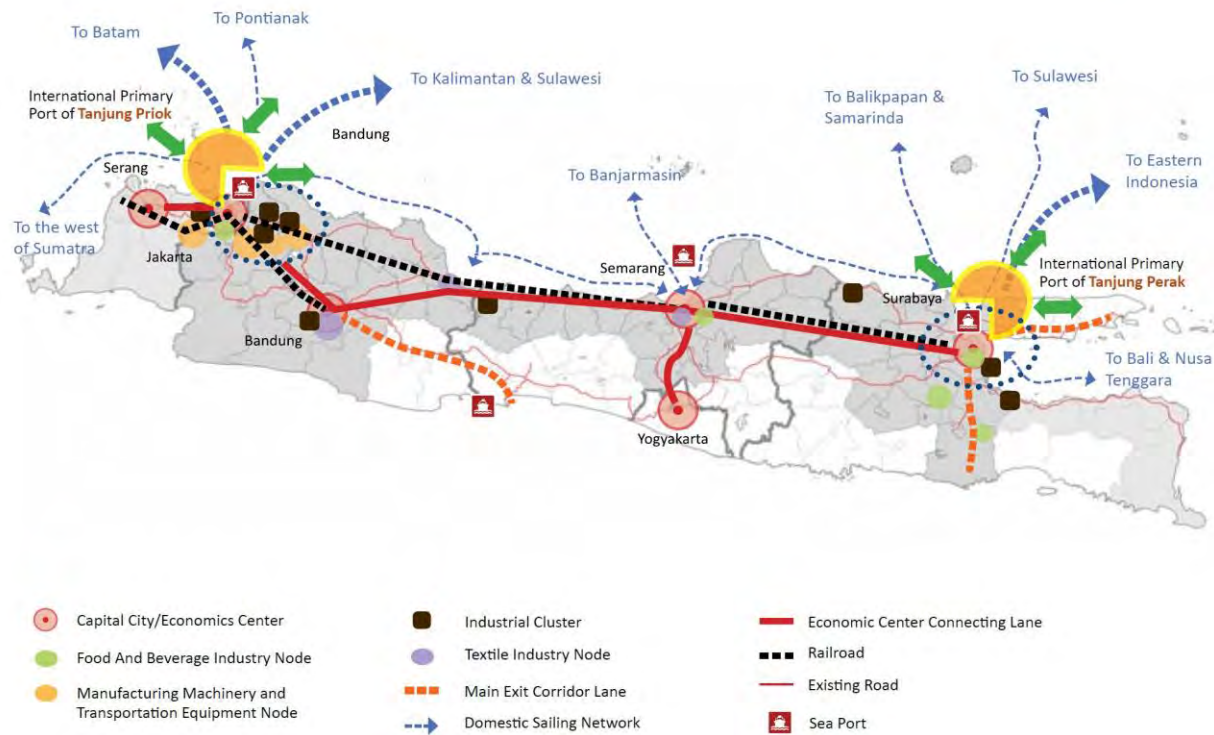
Source: Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011), 46.

Table 1.1.
Six Economic Corridor Themes in Indonesia's Economic Development Plan

Economic Corridor	Theme
Sumatra	Centre for production and processing of natural resources and the nation's energy reserves
Java	Driver for national industry and service provision
Kalimantan	Centre for production and processing of national mining and energy reserves
Sulawesi	Centre for production and processing of agricultural, fisheries, oil and gas, and mining
Bali	Gateway for tourism and national food support
Papua	Centre for development of food, fisheries, energy, and mining

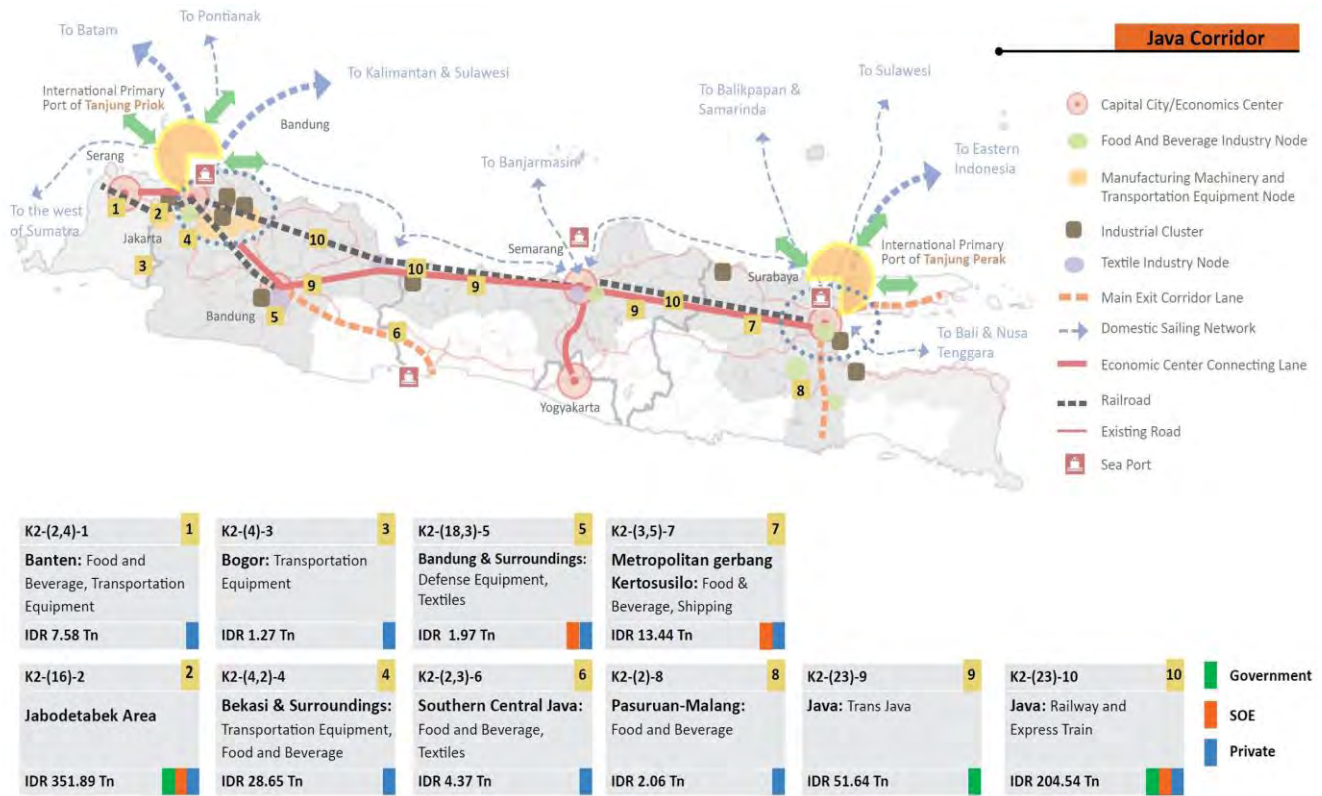
Source: Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011), 47.

Figure 1.2.
Map of Java Economic Corridor



Source: Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011), 74.

Figure 1.3.
Strategic Initiatives for Java Economic Corridor



Source: Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011), 74.

Chapter 2. Indonesia Background Information

Indonesia's economy has relied upon the availability and production of natural resources since independence.⁴ Through its MP3EI initiative (Indonesia's Economic Development Plan or the Plan), Indonesia seeks to diversify its economy and help local industries innovate and compete in a global economy.⁵ Indonesia is investing in its institutes of higher learning (IHLs) to produce engineers and entrepreneurs. The Plan seeks to assist science and technology parks through university partnerships for creating a globally competitive and innovative economy by enabling technology-based Indonesian industries to incubate and build businesses from entrepreneurial ideas. This approach includes public-private partnerships (PPP) to provide an environment for sustainable local technology entrepreneurship via cooperation among local, regional, and the national government, universities, for-profit businesses, and not-for-profits organizations for infrastructure investments and human capital development.

The Plan encourages growth within the Java technology corridor by promoting science and technology innovation through a PPP in Bandung. The Plan emphasizes cooperation among PPP stakeholders to improve the investment climate and accelerate Indonesia's economic development.⁶ One precedent from the United States for this approach is the experience over the past 30 years in Austin, Texas. In 1983 the State of Texas, The University of Texas at Austin, and local business leaders worked together to encourage the Microelectronics and Computer Technology Corporation (MCC), a first-of-a-kind, government-coordinated and private sector-led technology research consortium, to locate in Austin.⁷ MCC enabled the building of human capacity locally through microelectronics research, which subsequently attracted technology companies such as International Business Machine (IBM), Texas Instruments (TI), and Advanced Micro Devices (AMD) to locate facilities in what became known as Austin's "Silicon Hills."⁸

As part of Indonesia's Plan, its Ministry of Education and Culture seeks to enable human capacity development by increasing the number of engineering graduates five-fold by 2025 and overcome barriers to technology commercializing into products and services used by markets.^{9,10} One barrier in Bandung is the limited availability of hardware and software to empower engineers to develop ideas into commercially viable products and applications. Another potential barrier is the complexity of national regulations that obfuscate or slow technology commercialization, as a "successful implementation of economic corridors requires strong political will with the placement of appropriate infrastructure as well as streamlined competitive regulations to facilitate the movement of goods and people."¹¹ A third barrier is coordination among public and private objectives to overcome finite resources and competing interests in each economic corridor.¹² Other factors, such as local educational institutions, entrepreneurial culture, and the political environment, may play a role in promoting particular economic themes. Local innovation in human capacity growth and technology entrepreneurship can create employment and wealth and produce a multiplier effect on Indonesia's economic development, as discussed below.¹³

Indonesia's Entrepreneurial Ecosystem

Project staff evaluated both the opportunities and barriers to Indonesian national and regional entrepreneurial ecosystems through five factors:

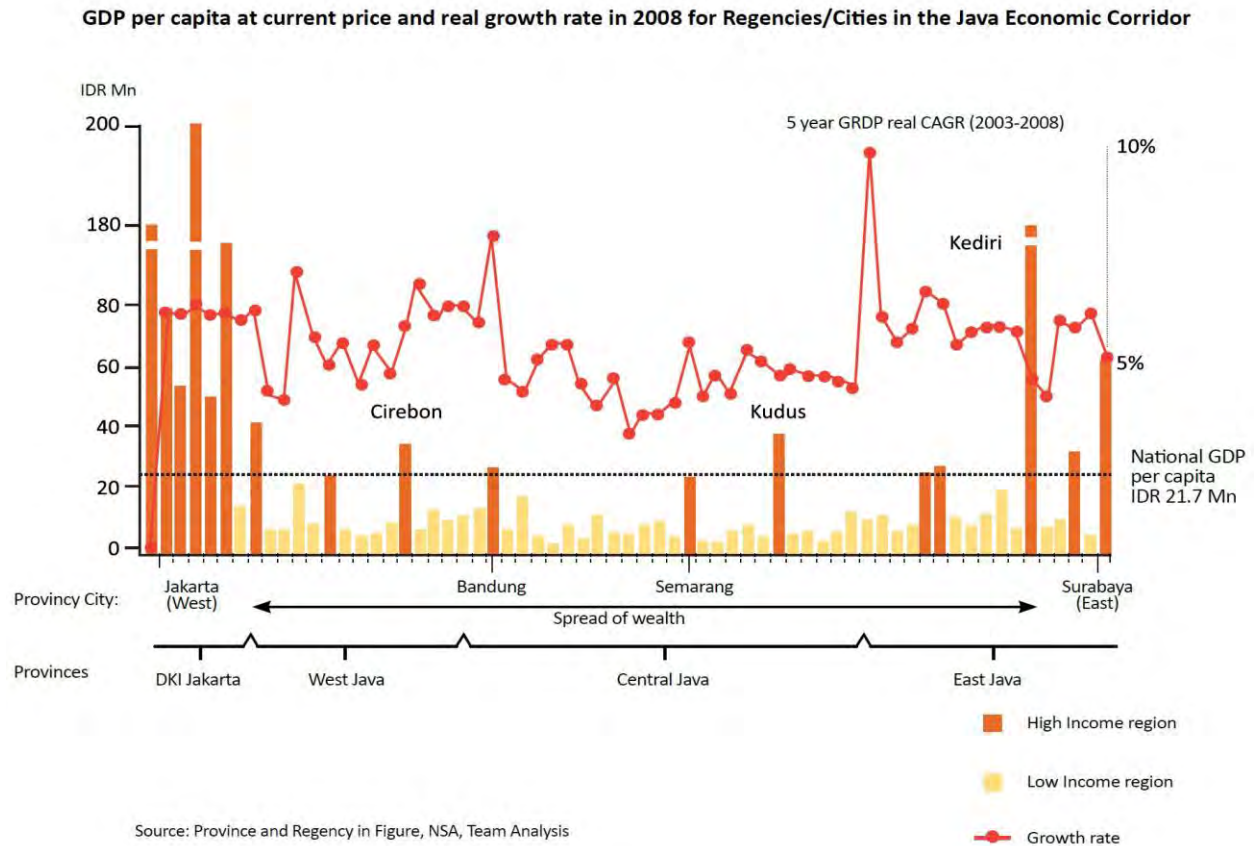
1. Government and policy;
2. Industry;
3. Higher education and research institutions;
4. Partner institutions; and
5. Finance.¹⁴

In Indonesia, Jakarta once wielded central policy-making authority. Since the end of President Suharto's administration in 1998, Indonesia has sought to empower regional and local governments to enable entrepreneurial innovation program support. Current President Joko Widodo, Indonesia's first president to be neither an army general nor a member of the nation's political elite, has articulated a national growth strategy based on technology commercialization.¹⁵

Indonesia, classified a "newly industrialized country," has the strongest economy in Southeast Asia based on economic output and growth. Important economic sectors are services (39.9 percent) and agriculture (14.4 percent).¹⁶ Indonesia's Gross Domestic Product (GDP) has grown around 5 to 6 percent per year over the last five years; GDP per capita (GDP/P) reached \$9,559 in 2013 (see Figure 2.1).¹⁷ After a period of financial, economic, and political crisis in the late 1990s, Indonesia began to shift its economy away from resource-based export and traditional manufacturing towards commodities and resource-based manufacturing. Indonesian manufacturing firms remain small: around 93 percent of firms consist of 5 to 19 employees. Indonesian firms may perceive an incentive to stay small and informal to remain under the radar of national environmental and labor regulations.¹⁸

Indonesia has approximately 59 public universities and 3,500 private universities in over 17,500 islands over 1.9 million square kilometers across the archipelago.^{19,20} Most universities provide basic post-secondary education and their faculty may conduct research. One 2010 study reported that Indonesia supported 42,722 researchers, the largest among ASEAN members, which contributes to a "researcher intensity" of 199 researchers per million citizens (1:5,000). This 1:5,000 Indonesian ratio of researchers to population can be compared to researcher ratios in other ASEAN countries: Singapore (1:175), Malaysia (1:2,000), and Thailand (1:3,000).²¹ The Indonesian Institute of Science (LIPI), the governmental authority for science and technology in Indonesia, which consists of 47 research centers spanning multiple disciplines, is the largest single source of published research.²² Only 51 Indonesian universities produced research published in internationally refereed publications; staff from the top 15 percent of universities produced 85 percent of all scientific publications.^{23,24} The research publication pattern reflects limited research funding, as only 0.08 percent of Indonesia's GDP is allocated to research, as compared to China where 1.46 percent of GDP is invested in research.²⁵

Figure 2.1.
Java Economic Corridor Gross Domestic Product Per Capita



Source: Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011), 75.

The Indonesian government has several national initiatives to support industry, such as the Regional IT Center of Excellence (RICE) based in 10 different Indonesian locations: Jakarta, Bandung, Surabaya, and seven other smaller cities. The RICE program activities include training, mentoring, communications, exhibition (RICE Expo), and manufacturing product prototype assistance. Regional entrepreneurial support can be as valuable as national initiatives. Project staff reviewed the regions using six different performance metrics: economic and industry focus, universities, ease of doing business, quality of life, focus of government initiatives, and growth potential. Based on these criteria, Bandung was the strongest ecosystem to explore further.

Bandung, Indonesia’s third largest population and its second largest metropolitan area, is the capital of West Java located approximately 140 kilometers southeast of Jakarta. Bandung’s local government has been developing the city into an innovation hub, which they call the “Digital Valley of Indonesia.”²⁶ Bandung’s Technopolis Project plans to set up 40,000 Wi-Fi spots within the city. Bandung is host to one of the government’s RICE facilities, integrating industry training

and promotion in manufacturing, pharmaceutical, and high-tech sectors. Despite its relatively large size, Bandung is classified as one of the top seven most livable cities in Indonesia by a local newspaper, which may indicate its growth potential as an entrepreneurial city to where Indonesians may want to relocate.²⁷ The proposed Bandung Technopolis Project is based around the Bandung Institute of Technology (ITB), Indonesia's most productive technical university and the anchor institution for the Bandung High Tech Valley (BHTV). ITB is a public co-educational technology research university that attracts the top 5 percent of the talent in the country; Table 2.1 lists its laboratories and research centers.²⁸ The BHTV will extend from Bandung to Jakarta and pass through Cikampek and Padalarang. The project envisions Jakarta as Indonesia's business center with Bandung as its research, development, and education center.

Table 2.1.
Bandung Institute of Technology Laboratory and Research Centers

Blackberry Innovation Lab (BIL)
The BIL lab at ITB educates students on mobile app development and smart cities.
Microsoft Innovation Lab (MIL)
The MIL lab at ITB educates students on use of Microsoft technologies to address local problems.
NTT DATA Innovation Laboratories Bandung (NTT)
The NTT lab at ITB tackles emerging Indonesian urban challenges. Lab Staff work in cooperation with JSCA Bandung taskforce, ITB and Keio Research Institute at SFC to study IT platforms for smart communities in Indonesia and develop innovative IT services through open innovation across industry, government and academia.
Research Centers at the Bandung Institute of Technology
The ITB research centers include: Industrial Engineering Center; Mathematical Modeling and Simulation Center; Microelectronics Center; Center of Tourism Planning and Development; Center of Biological Sciences; Center for Environmental Studies; Center for Coastal and Ocean Territory; Keenergian Policy Center; Remote Sensing Center; Instrumentation and Automation Technology Center; Center for Public Policy and Governance; Spatial Data Infrastructure Center; Health Technology Center and Sports; Unmanned System Studies Center; Center for Agrarian Studies; Research Centre for Logistics and Supply Chain; Center for Water Resources; Center for Climate Change; Pusat Pendayagunaan Open Source Software; and Rural Empowerment Center.
Microelectronics Lab (PAU)
The PAU lab's faculty contribute to development and research in the electronics sector.
Innovation and Entrepreneurship Development Institute (LPIK)
The LPIK institute deals with the innovation and entrepreneurial activities at ITB to spur innovation and entrepreneurial activity among students and faculty.
Center for Innovation, Entrepreneurship, and Leadership (CIEL)
CIEL, a center within the ITB School of Business, focuses its activities on the development of SMEs, innovation activities, entrepreneurship, and leadership. CIEL provides entrepreneurship trainings to SMEs and high school students. CIEL also performs some technology commercialization.

Source: BlackBerry Innovation Center, "About" (Bandung Institute of Technology, 2013), retrieved from <http://bbic.itb.ac.id/>; "Selamat Datang Di Website MIC-ITB" (Microsoft Innovation Center, 2012), retrieved from <http://mic.itb.ac.id/mic-itb>; NTT DATA Corporation, "NTT DATA Establishes New R&D Laboratories for the Asia Pacific Region" (NTT DATD Asia Pacific Pte. Ltd., 1 April 2014), retrieved from <http://www.nttdata.com/global/en/news-center/others/2014/040104.html>; "LPIK ITB" (2010), retrieved from <http://lpik.itb.ac.id/>; and "CIEL – SBM" (Center for Innovation, Entrepreneurship & Leadership, 2012), retrieved from <http://www.cielsbm.org/>.

As of 2013, Bandung's main industries were trading, which accounts for 42 percent of its Gross Regional Domestic Product (GRDP), followed by processing (21.56 percent), and transportation (13.31 percent).²⁹ Bandung's economic growth rate during 2008-2012 reached 8.53 percent per year, higher than Indonesia's national average growth rate of 5.8 percent.³⁰ In 2009, there were 429 large and medium-sized companies in Bandung, which grew to 573 in 2013.³¹ Among them, 20.4 percent of companies operated in the apparel industry, followed by textiles (12.8 percent), and food (7.1 percent). In 2013, there were 2,722 small business entrepreneurs in Bandung; apparel and textile are their major industries.³²

This section describes a few case studies from the partner institutions and how their expertise can be deployed to enhance Indonesian entrepreneurship. One sub-section reports on capacity building programs of the Institute for Innovation, Creativity, and Capital (IC²) at The University of Texas at Austin. A second sub-section analyzes National Instruments' initiatives to support technical innovation in developing countries.

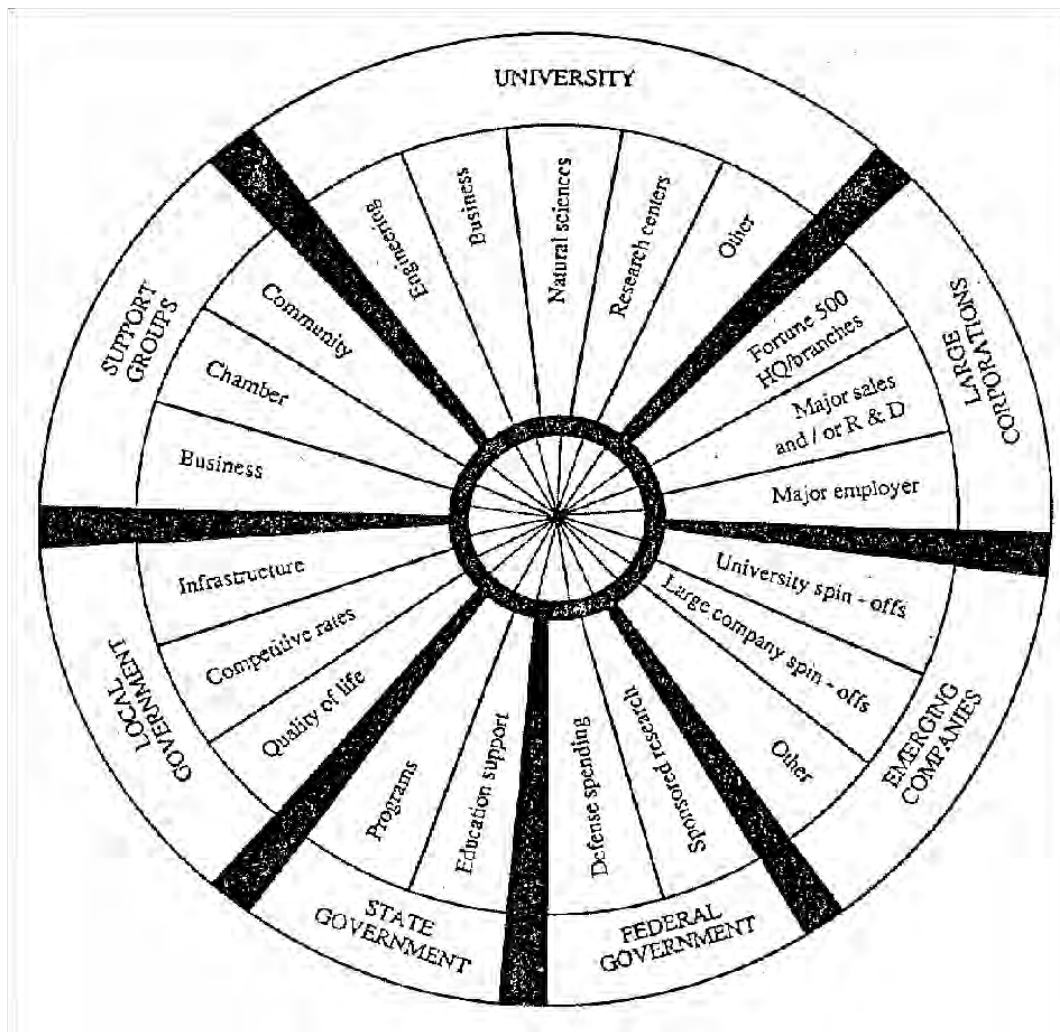
The Technopolis Approach and The IC² Institute

Ever since the rise of Silicon Valley in California and Silicon Hills in Austin, governments in nations as diverse as South Korea and Malaysia have attempted to establish so-called "technopolis" models: public-private partnerships that enable economic and job growth in local industry that mimic a "technopolis wheel" (see Figure 2.2) based on the experience of Austin, Texas.³³ This technopolis approach can be tailored to the Indonesian context to advocate for locally-driven, public-private partnerships that have the potential for enhancing industrial innovation in Bandung.

The IC² Institute at The University of Texas at Austin is an interdisciplinary research unit that advances knowledge-based theory and practice for entrepreneurial wealth creation around the world. The IC² Institute has more than 35 years of experience in over 30 countries applying capacity-building programming, supporting innovation, and developing science and technology parks.³⁴ IC² programs could support the efforts of Indonesia's new innovation initiatives.³⁵ IC² has found that there is no single "model" for success, as any program ought to be tailored to specific needs of a site, community, and ecosystem.

Entrepreneurship case studies can be informative; one recent example is the efforts to promote science and technology parks in Portugal since 2007 by the IC² Institute working with the University Technology Enterprise Network (UTEN) in Portugal to "lead, facilitate, and accelerate the commercialization of science and technology innovations created by Portuguese researchers."³⁶ UTEN stimulates research and development ventures in science and technology parks by creating a network of Portuguese professionals working in innovation that now includes more than 30 members from universities, technology transfer offices, research laboratories, incubators, and professionals sharing best practices across the country. The UTEN program contains a significant training component: between 2007 and 2010, networking events trained over 1,500 participants. Another focus is in commercialization of university research; during 2007-2010 in Portugal there was a 132 percent increase in academic spin-offs, and a 26 percent increase in university executed licenses and agreements.³⁷

Figure 2.2.
The Technopolis Wheel



Source: Raymond Smilor, David Gibson, and George Kozmetsky, "Creating the Technopolis: Linking Technology Commercialization and Economic Development" (Journal of Business Venturing 4, 1988), 49-67.

Bandung's proposed technology corridor could build technical capacities among Indonesian entrepreneurs by introducing industry-standard training and certification (for example, using National Instrument's technology), as well as improving access to cutting-edge technology. It could strengthen regional innovation ecosystems by providing technology transfer and business development training to local professionals in universities, technology parks, and entrepreneurial centers, as established jointly by local and state governments with private, local, and foreign firms. This approach could mobilize regional public-private partnerships, innovation ecosystems among accelerators, NGOs, firms, universities, business development agencies, and government organizations.

National Instruments

National Instruments, through its Planet NI program, supports science and technology innovation in nations around the world and could assist in Indonesia. This section describes Planet NI programs in Malaysia, Vietnam, Uganda, as well as its cooperation with the U.S. Agency for International Development (USAID).

In 2013, National Instruments (NI) established the NI Academy & Innovation Nucleus (NI-AIN), a shared services facility in Malaysia to nurture local small and medium enterprises (SMEs) and institutions of higher learning (IHLs) to innovate, develop talent, and create intellectual property rights. This project was the result of a public-private partnership between NI and the Malaysian government; the NI-AIN facility is a project supported by the Economic Transformation Program spearheaded by NI, Technology Park Malaysia Corporation Sdn Bhd (TPM), and SME Corp. The NI-AIN project allows local SMEs, IHLs, and entrepreneurs to use the NI-AIN facility in developing proficiency and competencies, proof of concepts, prototypes, commercial solutions, and intellectual property for various industries.

Industries involved include oil and gas, control and instrumentation, transportation, wireless communication, green technology, renewable energy, innovation control and instrumentation, radio frequency, and agricultural science. In the NI-AIN ecosystem, companies and users take advantage of an unified LabVIEW platform as the foundation for various designs and solutions in measurement and control systems for a wide range of applications that accelerate productivity, innovation, and discovery. The Planet NI program helps Malaysian entrepreneurs establish small businesses and increase their access to world-class development tools and technical training. Planet NI assistance helps Malaysian firms develop and enter technology-based markets so they can achieve sustainable prosperity and contribute to economic development and employment. NI-AIN, part of Malaysia's Prime Minister's economic development and national economic transformation program for the electrical and electronic industry sector, began in April 2012 and took 15 months from conception to implementation; it has been operational since July 2013. This project expects to attract over 50 SMEs to NI-AIN for their development projects or full technical training, allows firms to adopt the NI platform, and enables local firms to use LabVIEW and join NI Alliance Partners.

Industries involved include oil and gas, control and instrumentation, transportation, wireless communication, green technology, renewable energy, innovation control and instrumentation, radio frequency, and agricultural science. In the NI-AIN ecosystem, companies and users take advantage of an unified LabVIEW platform as the foundation for various designs and solutions in measurement and control systems for a wide range of applications that accelerate productivity, innovation, and discovery. The Planet NI program helps Malaysian entrepreneurs establish small businesses and increase their access to world-class development tools and technical training. Planet NI assistance helps Malaysian firms develop and enter technology-based markets so they can achieve sustainable prosperity and contribute to economic development and employment. NI-AIN, part of Malaysia's Prime Minister's economic development and national economic transformation program for the electrical and electronic industry sector, began in April 2012 and took 15 months from conception to implementation; it has been operational since July 2013. This project expects to attract over 50 SMEs to NI-AIN for their development projects or full

technical training, allows firms to adopt the NI platform, and enables local firms to use LabVIEW and join NI Alliance Partners.

A Planet NI project promotes technology, nurtures entrepreneurship, and supports upcoming technology companies through a national Hi-Tech park in Vietnam through a Memorandum of Understanding (MOU) with the Saigon Hi-Tech Park (SHTP). Through this partnership, NI provides technology workshops, hardware, and sponsors a local innovation competition to promote education, entrepreneurship, startup incubators, training centers, research, and software development. Planet NI will invite promising startups emerging out of the innovation competition for further mentorship and guidance.

Since 2014, Planet NI has been cooperating with Makerere University in Kampala on the “Planet NI Innovation Design Competition for Young Entrepreneurs in Africa” to nurture innovation and entrepreneurship among future and recent engineering graduates in Africa by providing support for market-ready projects that support sustainable development in a local community. Through the Planet NI program, ten selected student teams were given access to NI’s development platforms to design prototypes and solutions that meet local challenges in Uganda. NI offered hardware tools, training, and consulting to help turn value-added ideas into functional prototypes using the NI myRIO embedded hardware platform and NI LabVIEW system design software.³⁸

National Instruments recently joined in a USAID partnership valued at \$4.5 million over the next five years to help develop future ASEAN leaders by educating a technical workforce in the Lower Mekong countries: Burma, Laos, Thailand, Vietnam, and Cambodia.³⁹ This project supports ASEAN integration, sustainable economic growth, SME development, and youth employment. National Instruments will provide discounted and in-kind software, services, and hardware to enable workforce development, local innovation and entrepreneurship, SME competitiveness, and enhanced education in engineering, science, and technology.

Planet NI’s partnerships currently include the SME Corporation in Malaysia, Acumen Fund and Berytech in Lebanon, Engineering World Health in Honduras, IdeaSpace in the Philippines, and various incubation labs in universities around the world. Planet NI has goals for creating supplemental partnerships with the United Nations Development Program (UNDP), the U.S. Agency for International Development, and the World Bank.

The UNDP supports Millennium Development Goals (MDG) in Indonesia, which means that business development or entrepreneurship are not included. The UNDP also supports Indonesia’s national priorities, improving governance, as well as crisis prevention and recovery, with projects concentrated around its Jakarta office with no presence listed in Bandung.⁴⁰ As the UNDP invests in environmental and energy initiatives, there is an opportunity for NI’s products to enable these projects, such as with electricity provision across its many islands. The UNDP’s Wind Hybrid Power Generation Marketing Development (WHyPGen) initiatives attempt to expand coverage within the country by supporting private utility companies in developing renewable energy sources primarily in West and Central Java.⁴¹

Planet NI has worked with the USAID Partnerships for Enhanced Engagement in Research (PEER) network. USAID’s mission in Indonesia supports global health and food security. Out of USAID Indonesia’s 36 active projects, 11 are located on the island of Java and three projects are

located in Bandung.⁴² For example, USAID's Agribusiness Market and Support Activity projects (which will continue until April 2016) supports high-value agricultural products by addressing low investment, inadequate infrastructure, and underdeveloped agri-business practices. USAID's higher-education investments in Indonesia include its Higher Education and Leadership Management (HELM) program that provides technical mentoring, training, and other forms of supports to partners.⁴³ HELM works to strengthen leadership and management capacity in 50 higher education partners across the country in four main core areas: general administration and leadership, financial management, quality assurance, and collaboration with external stakeholders.

Even though the World Bank's (WB) Indonesia program focuses on health and social services, many of its 13 national community empowerment projects indirectly support private sector development, such as a \$95 million Research and Innovation in Science and Technology Project in Jakarta (it ends in December 2020). The World Bank database includes 17 other projects around Jakarta with a focus on the energy sector, gas development, and power transmission. The WB's Bandung projects also focus on power development, including a \$640 million hydroelectric dam project.

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Chapter 3. Next Steps

Indonesia's signature development of economic growth initiative the MP3EI Plan directly aligns with priorities of both Planet NI and IC² for industrial and economic growth. The Plan intends to develop human resource capacity and commercialize science and technology industry innovation.⁴⁴ NI and IC² can assist Indonesia to develop Java's economic corridor by facilitating public-private partnerships that support Indonesia's efforts. Table 3.1 lists some of the challenges that NI could face in the Java economic corridor. Appendix 3 includes an analysis from the Asian Development Bank and think tank Strategic Asia.

The MP3EI Plan identifies eight priority sectors for Indonesia's development through 2025: agriculture, mining, energy, industrial, marine, tourism, telecommunications, and the development of strategic areas. Other analysts have identified nine target business sectors.⁴⁵ Bandung's current focus is on defense equipment and textiles. Java's economic corridor is seen as a "driver for national industry and service provision" (Figure 3.1).⁴⁶ NI and IC² guidance can support these sectors to align with existing Indonesian government strategies.

Planet NI already supplements USAID, UNDP, and World Bank projects with NI technologies and expertise. Planet NI could build upon its existing relationships to scale programs in Indonesia. A NI partnership with the World Bank would be attractive, as the World Bank tends to focus on intensive infrastructure projects, like roads and hydroelectric dams, which could benefit from introducing NI equipment, software, and technical assistance.

Table 3.1.
Challenges in the East-West Economic Corridor

• Cross-border investment liberalization regulations ⁴⁷
• Agribusiness development
• Financial schemes for business operations along corridor
• Infrastructural improvements in gateway nodes
• Secondary roads to let the rural communities pass through the main artery of economic corridor
• Services on business development for small and medium enterprises along the poorer areas of the corridor
• Management of tourism initiatives and projects at both the national level and across the EWEC countries
• Infrastructural services and road access to tourist spots
• Model or benchmarks to assess the performance and progress in achieving the goals that have been established for the EWEC

Source: Strategic Asia, "Implementing Indonesia's Economic Master Plan (MP3EI): Challenges, Limitations, and Corridor Specific Differences" (Foreign & Commonwealth Office, June 2012), 49.

Figure 3.1.
Java Economic Corridor



Source: Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011), 74.

Entrepreneurship implementation in Indonesia’s economy has not been easy.⁴⁸ For example, analysts reported that the current Bandung corridor development plan is not integrated with human resource development and training centers.⁴⁹ This situation may present NI and IC² with an opportunity to focus on entrepreneurial training. For example, the Partnerships for Enhanced Engagement in Research (PEER) between Planet NI and USAID illustrate a mechanism for cooperation on human resource development within Indonesia. NI could leverage its relationships cooperating with USAID, United Nations Development Program, and the World Bank to identify funding and training programs to support future NI opportunities to facilitate technology commercialization. There are many organizations active in Indonesia that are potential for NI program partners, such as I-Dev International, Intellectap, Care, and WeConnect International.

Due to Bandung’s focus on technology entrepreneurship, there is opportunity for Planet NI and IC² to engage, collaborate, and build a sustainable relationship with the city government. This relationship may lead to opportunities to create programs and university-based technology competitions that attract Indonesia’s best technical talent to create innovative products which contribute to sustainable development and economic progress. According to Bandung’s Mayor, Mr. Ridwan Kamil, “Bandung Technopolis will be built like a new city. People will live there, work there and have fun there. But they won’t be working in just any industry. Only in the technology industry.”⁵⁰

The Bandung Institute of Technology and the Indonesian government’s commitment to develop human capital provides an opportunity to identify talent within Bandung. There are five existing Microsoft Innovation Centers (MIC) in Indonesia, one of which is located in Bandung. MICs are facilities that bring together students, entrepreneurs, startups, and resources. A partnership with the existing MICs could provide NI with an opportunity to leverage existing infrastructure and introduce students and entrepreneurs to NI technologies to enhance community involvement and government engagement to solve local challenges within the MIC. Collaboration with Bandung Digital Valley (BDV) offers NI and IC² an opportunity to connect with promising technical talent in Indonesia and facilitate innovation. BDV runs a high profile incubator, the Indigo Incubator, which has been credited with launching some of Indonesia’s most promising technology startups.⁵¹

Makedonia is a social innovation hub in Jakarta that supports the use and development of hardware solutions.⁵² For example, Maker Movement, a program within Makedonia, is in its nascent stages in Indonesia. Indonesia's first hardware hackathon was held in March 2015 and has garnered significant participation and attention. An early involvement with this movement could prove beneficial for both Planet NI and any technical talent that takes part in this competition. Engineers building solutions to challenging problems could use NI's technologies and technical consulting to make a difference in the development of Indonesia. There are several other organizations working in entrepreneurial development that NI and IC² could explore for potential collaboration. Appendix 4 lists potential partner organizations. Appendix 5 describes additional potential interviewees and interview goals. Table 3.2 lists organizations that are working within Indonesia.

Future Plans

Graduate consultants from The University of Texas at Austin and National Instruments representatives visited Indonesia in June 2015 to meet with local leaders to establish relationships and discuss the comparative advantages within Indonesia's entrepreneurial landscape. The UT graduate consultants sought to identify potential Indonesian colleagues and develop a picture of local policy, technological ecosystems, and talent markets. Together, the consultants and local leaders discussed how to enhance technological entrepreneurship in Indonesia and overcome current roadblocks to that process. The graduate consultants also met with business, academic, and government groups to discuss the long-term impacts of international technology transfer and its application in Indonesia. The discussions addressed protecting and commercializing technology; attracting talent; improving research and design; Indonesian processes for creating, enabling, adapting, and growing SMEs; and building a public-private consortium of institutions that can sustain entrepreneurship in Indonesia. The consultants also discussed the technology "ladder," moving from transfer to adoption, from adoption to adaptation, and from adaptation to production. They sought to identify how Planet NI and IC² can cultivate a two-way exchange of knowledge with Indonesian colleagues, focused on the benefits of partnerships among universities, entrepreneurs, and the broader market. The graduate consultants explored the benefits of technology transfer offices and the comparative experiences of Indonesia and Texas. Table 3.2 lists potential contacts identified as prospective partner organizations in Indonesia. Appendix 6 contains possible funding opportunities in Indonesia. The proposal can be found in Chapter 5.

Table 3.2.
Prospective Partner Organizations in Indonesia

• ASEAN Foundation
• Ciputra Foundation
• DFAT Department of Foreign Affairs and Trade (Australia)
• Bandung Digital Valley
• Endeavor
• Ennovent
• Entrepreneur's Organization

• Fair Trade USA
• Global Entrepreneurship Program Indonesia
• IBEKA, hydropower social enterprise
• I-DEV International
• Inotek Intellectap
• Kolaborasi Indonesia
• Mercy Corps
• Solidaridad
• Swiss Contact
• Startup Weekend
• Makedonia
• The Prince's Youth Business International
• UP Global
• WEConnect International
• World Vision Australia
• 500 Startups

Source: Created by graduate consultants at The University of Texas at Austin.

Chapter 4. Initial Travel to Indonesia

Noelle London and Francoise Van Keuren, on behalf of the six-person team of graduate consultants, traveled to Indonesia June 6-20, 2015, to conduct preliminary research in the emerging technology entrepreneurship ecosystem. Their objectives were to map the innovation ecosystem that has in recent years attracted international attention, identify and build relationships with potential stakeholders, understand investment priorities at a regional and national level that align with NI technology offerings and IC² capabilities, and collect video footage to share the opportunities with partners in Texas.

Ms. London and Ms. Van Keuren held focus groups and interviews with innovation and tech transfer stakeholders from various sectors. They met with students, lecturers, professors, deans, and vice-chancellors at public and private businesses and universities to discuss barriers for converting patents into commercial intellectual property and educating engineering students about practical problem-solving and wealth-creating entrepreneurship. They met with stakeholders and young entrepreneurs in the startup community at hackerspaces, incubators, accelerators, and development labs. They met with a variety of non-governmental organizations and prominent multilateral funding agencies, including representatives of USAID and dozens of regional NGOs, to understand the funding priorities around technology innovation, commercialization, and entrepreneurship. Table 4.1 lists the organizations and contacts met with during the in-country meeting. Appendix 7 contains the meeting summaries and contact information from each organization and contact person.

Table 4.1.
Organizations and Contacts from Indonesia In-Country Meetings

Organization	Contact
500 Startups	Kaspar Zhou, Investment Manager
American Chamber of Commerce to Indonesia (ACC/Indonesia)	Lin Neumann
American Chamber of Commerce to Indonesia (ACC/Indonesia) / Green Works Asia	Agnes Safford
Bandung Creative City Forum	Muhammad Ajie Santika
Bandung Digital Valley Project	Indra Purnama
City of Bandung	Iman Halwatul, Program Manager
eFishery	Gibran Chuzaefah Amsi El Farizy, Founder and CEO
Endeavor Indonesia	Inez Stefanie, Entrepreneurs Search and Growth
Endeavor Indonesia	Sati Rasuanto, Managing Director, and Reza Caropeboka, Communications and Outreach Manager
Global Entrepreneurship Monitor Indonesia (GEM)	Catharina Badra Nawangpalupi, Director
Global Entrepreneurship Program Indonesia (GEPI)	Angelyn Ardiwinata, Executive Director, and Nadia Nilam, Program Officer
Institute of Business and Economics Kerakyatan	Tri Mumpuni, Economic Development
Kibar	Yansen Kamto, Chief Executive
Kolaborasi Kapital Indonesia	Adryan Hafizh, Co-Founder and CEO

Ministry of Industry, Republic of Indonesia	Merri Pintaria
Ministry of Industry, Republic of Indonesia	Haris Munandar N, Ph.D., Director General
Startup Lokal	Aulia Halimatussadiah (Ollie), Initiator
Technology Institute Bandung (ITB)	Donald Crestofel Lantu
USAID Indonesia	Emmanuella Delva, Ph.D., High Education Advisor
USAID Indonesia	Thomas J. Cody III, Senior Alliance Builder
USAID Indonesia: SME	Kelly Gibbons, Contractor

Chapter 5. The Indonesia Partnership to Accelerate Entrepreneurship

The following is a draft conceptual proposal to seek financial support for specific subsequent initiatives.

A. Objective of Alliance: The Indonesia Partnership to Accelerate Entrepreneurship (The Indonesia Partnership) is an alliance among Indonesian technology based organizations and three U.S. organizations: National Instruments, The University of Texas at Austin, and its research center and business incubator IC² Institute. The Indonesia Partnership seeks to strengthen the national ecosystem for innovation, entrepreneurship, and SME growth in Indonesia's technology sector and facilitate the commercialization and growth of technology-based early stage hardware and software-sector enterprises.

B. Amount of Funding Requested: \$ XX

C. Value of Private Sector Resource Contributions: \$ XX

D. Description of Proposed Alliance

Statement of Need: Indonesia, an Asian leader in entrepreneurial activity and technology innovation, stands out for its focus on the development of human resources capacity, technology innovation, and intellectual property activity. Indonesia's MP3EI Plan seeks to lead entrepreneurial ecosystem development. However, early stage enterprises and SMEs lack sufficient business development training, mentors, and access to capital. Incubators and universities have limited collaboration with private-sector actors, investors, and other stakeholders, and often lack modern hardware and software to empower engineers and scientists to develop and commercialize innovative solutions.

Under its MP3EI Plan, Indonesia established a national priority to provide infrastructure development to Indonesians entrepreneurs. The Indonesian government, international donors, NGOs, and private actors are focusing on technology commercialization and securing intellectual property. Significant demand exists for innovation and business growth in this sector, especially related to start-up incubation, software development, and data collection.

Objectives: The primary objective of The Indonesia Partnership is to demonstrate how human resource related to technology entrepreneurship can strengthen innovation, entrepreneurship, and SME growth in Indonesia's technology sector and facilitate the commercialization and growth of technology-based early staged enterprises. The Partnership will build technical capacities of Indonesian entrepreneurs by improving access to National Instruments' cutting-edge technology and commercialization training certifications. The technology transfer will empower Indonesian engineers and scientists to develop innovative technologies that respond to local needs. The Partnership will provide aspiring Indonesian entrepreneurs with training and mentoring in business development, technology commercialization, and management consulting. It will establish a platform for ongoing collaboration in and development of a robust entrepreneurial

ecosystem in the technology sector, engaging entrepreneurs and diverse actors from academia and research, the private sector, NGOs, government organizations and investors.

Approach and Activities: The Indonesia Partnership proposes a sustainable, measurable, and scalable initiative to enhance the entrepreneurial ecosystem and support the growth of innovation and entrepreneurship in Indonesia's technology sector. The core activities of this initiative, such as the innovation commercialization training and the transfer of NI technologies, have decades of evidence demonstrating their efficacy. The Indonesia Partnership proposes a four-phase program to enhance the entrepreneurial ecosystem and facilitate the commercialization of innovative ideas and products to solve local inefficiencies and grow businesses. Over three years, The Indonesia Partnership will provide technology that will facilitate prototype development and improve productivity efficiency. It will train engineers, scientists, and other entrepreneurs in technology transfer, entrepreneurship, and business development, and foster an ecosystem in which researchers, investors, NGOs, and private sector and government actors actively collaborate.

Phase I (4 months): Partner Selection and Co-creation of Programming in Indonesia

- Deliver initial overview of the technology sector and entrepreneurial ecosystem to established and potential partners in Indonesia.
- U.S. partners travel to Bandung and Jakarta to continue market research, networking, and partnership development in the entrepreneurial ecosystems.
- Establish official partnerships with (3+) Indonesian institutions that wish to establish a Technology Transfer Office (TTO).
- Facilitate in-country planning meetings with Indonesia Partnership members and newly selected TTOs. Determine the schedule. Perform strengths assessments of partner institutions and determine the best use of National Instruments' technologies.
- U.S. partners provide introductory training for partner institutions on how to establish TTOs, innovation commercialization, and methods to bolster the entrepreneurial ecosystem.

Phase II (8 months): Training: Technology, Innovation Commercialization, and Ecosystem Development

- Customize business development curriculum based on the needs of partner institutions and Indonesian entrepreneurs. Training may include topics such as protecting and commercializing technology, moving beyond prototypes, managing technology, intellectual property rights, establishing networks, and managing R&D.
- Intensive training and planning can occur in Bandung, Indonesia, or Austin, Texas.
 - One group of representatives will work primarily with National Instruments to receive training on the technical components of technology transfer and the diverse applications and potential of NI technologies.
 - A second group of representatives from the Indonesian Technology Trade Offices will participate in collaborative planning with U.S. partners and receive intensive training on how to establish and manage a successful TTO. The IC² Institute's Global Commercialization Group teaches best practices in technology

commercialization and entrepreneurial ecosystem development in emerging markets.

- A third group of entrepreneurs will participate in the IC² Institute's "Innovation Readiness" training and incubation. Entrepreneurs will receive business development mentoring throughout the training and will leave the program with a plan to take their innovations to market.
- All parties will participate in training and collaborative planning on opportunities specific to the technology sector in Indonesia. NI, IC², and UT representatives and other subject experts will provide training and participate in planning.
- Facilitate Training of Trainers for partner institutions on select trainings such as business development, technology commercialization, and an overview of the Indonesian technology sector.

Phase III (Year 2): Technology Transfer, Training, and Mentorship

- Introduce National Instruments technologies at Indonesian TTOs.
- NI representatives provide in-country training for users and super-users, and long-term technical support.
- Indonesian partners facilitate ongoing innovation and business development trainings for engineers and scientists.
- NI technology users and super-users provide ongoing training for new users.
- Engage (5+) technology sector and (5+) technology and business expert agencies in The Indonesia Partnership to supply mentors, practicum hosts, trainers, competition judges, and potential investors. Alternatively, the Partnership may recruit individuals rather than agencies.
- U.S. partners travel to Bandung and Jakarta, Indonesia, for partnership and network meetings.
- Launch business and technology mentorship for science and technology researchers and small-scale enterprises.

Phase IV (Year 3): Active Commercialization and Progress Monitoring

- Host a Start-up or Scale-up business competition for technology innovators in Indonesia's technology-sector. Select participants will be offered six-month intensive mentorship and incubation experiences.
- Partner TTOs screen businesses, conduct Quicklook® assessments, support business model development, and establish go-to-market strategies.
- Partner TTO representatives trained in Phase III provide ongoing training for scientists, engineers, and entrepreneurs in technology commercialization and NI technologies.
- Ongoing mentorship from National Instruments, IC², and in-country business mentors.
- Analyze scaling potential and develop plan for expansion.

Outputs, Outcomes, and Impact: **Figures will change based on the amount requested*

Outputs

Phase I:

- (3+) Partner institutions incorporate NI technologies into their laboratories.
- (5+) Potential Technology Transfer Offices assessed.
- (1) Signed MOU with each partner institution.
- (3+) Introductory training programs on select topics facilitated for TTO representatives.

Phase II:

- (4) Customized trainings for Indonesian engineers and entrepreneurs.
- (2+) Representatives from each partner TTO participates in intensive US-based training.
- (2+) Representatives from each partner TTO participate in select Training of Trainers.

Phase III:

- (3+) Technology Transfer Offices established and working with NI technologies.
- (60+) Startups assessed.
- (50+) Indonesian engineers and scientists have access and are trained on NI technologies.
- (50+) Indonesian engineers and entrepreneurs are trained in innovation commercialization.
- (15+) Specialized training and networking events hosted by TTOs for entrepreneurs.
- (5+) Internships created.
- (25+) New or improved business plans.
- (20+) Business and subject-matter experts signed on as mentors.

Phase IV:

- (100+) Indonesian engineers and scientists have access and are trained on NI technologies.
- (100+) Indonesian engineers and entrepreneurs are trained in innovation commercialization.
- (30+) Specialized training and networking events hosted by TTOs for entrepreneurs.
- (10+) Internships offered/created.
- (25+) New or improved business plans.
- (30+) Business and subject-matter experts signed on as mentors.
- (1+) Innovation competition held in Indonesia's technology sector for up to 100 participants, with significant national news and social media attention.

Project Outcomes

- (150+) Entrepreneurs experience increased knowledge and skills in business development.
- (100+) Pitch opportunities between investors and program participants.
- (35 percent) Increase in invention disclosures within partner universities and other organizations.
- (100 percent) Increase in revenue among program graduates.
- (5+) Spin-off businesses from partner universities in the technology sector.
- (150+) New employees hired by program graduates.
- (10+) Program graduates' SMEs using NI technologies.

Project Impact

The Indonesia Partnership seeks to empower engineers, scientists, and small to medium enterprises with the technology, business development support, and access to a thriving entrepreneurial ecosystem. After three years, this project expects to see wealth creation among its program graduates by way of steadily increasing business revenue, exposure to and acquisition of foreign investments and local venture capital, more employees hired at graduates' enterprises, and increased household income. These indicators will allow for a comparison to baseline measures. Additional long-term benefits will be realized in the technology sector, where small-scale enterprises are providing market-based innovations that solve local inefficiencies. A final long-term impact of the project will be the diffusion of NI technologies into Indonesian companies in the technology sector and beyond.

Core Partners: This four-phase program will involve seven participating institutions:

National Instruments and Planet NI: National Instruments is a US\$1.2 billion international company that equips engineers and scientists to meet the challenges of an increasingly complex world. The company's Planet NI program empowers engineers around the globe by nurturing local innovation and supporting small and medium enterprises, startups, and other organizations, using technology-based innovation and development to accelerate productivity, innovation, and discovery. National Instruments' proprietary platform (LabVIEW system) helps design programs that work to acquire and analyze measurement data and support instrument control, embedded control and monitoring systems, and automated test, and validation systems.

Contribution: Planet NI will provide technical hardware and its core software, LabVIEW, to advance the innovation capacity of (3+) Indonesian institutions. National Instruments will also provide training and mentoring on their technologies, and maintenance to build the capacities of Indonesian entrepreneurs and researchers. Its contribution will result in the dissemination of National Instruments' technologies and increase the number of academic spin-offs, leading to the sustainable development of an entrepreneurial ecosystem and wealth creation in Indonesia. Planet NI also can connect Indonesian participants with NI's existing system of customer companies for mentoring and technical consulting.

Technology Institute of Bandung (ITB): ITB is one of the oldest and most prestigious technology focused universities in Indonesia. It is the only Indonesian public university that has programs accredited by the U.S. Accreditation Board for Engineering and Technology (ABET). ITB also houses the LPIK incubator, which has served as pipeline for dozens of Indonesian businesses and innovative technologies.

Contribution: As one of the lead technology-oriented institutions in Indonesia, ITB will be the main selection pool for participants in the entrepreneurship program. Through this partnership, top students in business and technology will receive life-changing trainings in technology development and commercialization. These students will then continue on as country-changing entrepreneurs and leaders.

Global Entrepreneurship Program Indonesia (GEPI): GEPI is an Indonesian non-governmental organization that is part of a global entrepreneurship initiative started by the U.S. State Department. The organization intends to improve Indonesia's economic development and social welfare through entrepreneurship. It plans to achieve this by encouraging early-stage start-ups. GEPI, now in its beginning phases of development, developed their first incubator in 2013, which is currently in its "preview phase."

Contribution: Currently, GEPI serves as a "community builder" and holds around 20 trainings and summits per year. Trainings take the form of app developer trainings, hackathons, networking events, and other digital-based events. They provide a co-working space and incubation program focusing on early-stage start-ups. Individuals selected for the incubation program undergo six months of intensive training, including mentorship from other experienced startup owners and a self-tailored curriculum.

Ministry of Industry: The Indonesian Ministry of Industry spearheads economic initiatives focused on developing SME growth, value-added and "derivative" economies, and research and development capacity. In 2011, the Indonesian president announced a plan to launch several high-tech parks across the country, and the Ministry of Industry is charged with implementing the plan. They partner with several universities, international organizations such as UNIDO, JICA, and KOICA, as well as other countries such as Italy, Spain, and other EU countries. This will be their first direct partnership with a U.S. organization.

Contribution: The Ministry of Industry will be providing access to national incubators, shaping technology entrepreneurship policy, and providing incentives for SME development. IC² is excited to partner with the Ministry to guide them in capacity-building and advisement for technology commercialization in each new incubator. NI will have the opportunity to provide their technology for each of these incubators.

City of Bandung: Bandung is the third most populous city in Indonesia, nestled in the mountains of West Java, and is home to the prestigious Institute of Technology (ITB). The city is known for its lush, outlying agriculture, culinary arts, and high-fashion and textile industries. Through the current Mayor's vision, the city is seeking to support 100,000 entrepreneurs in the next five years. The city has also highlighted their plans to become a "smart city" in utilizing technology and innovation for governance and public works. The Mayor is also pursuing an ambitious and visionary plan to create a "technopolis" just outside of the city's boundaries.

Contribution: The City of Bandung will provide the space and political support necessary to carry out capacity-building and research and development exercises. Bandung is also has the vision, autonomy, and financial support to make entrepreneurship successful in the region. There are also clear opportunities in partnering in Bandung's grand technopolis plan.

The IC² Institute is an interdisciplinary research unit of The University of Texas at Austin that works to advance the knowledge-based theory and practice of entrepreneurial wealth creation around the world. It offers business incubation and international business development curriculum, which focuses on themes like innovation readiness and entering market strategies. The Institute has investigated best practices in over 25 nations and deployed programs providing training, building capacity, and actively assisting business growth through business engagement, capital acquisition, and product development.

Contribution: The IC² Institute's subject expertise and evidence-based methods will help the program achieve its objectives of training, technology transfer, and startups assessments in Indonesia. The Institute will serve as expert mentors to The University of Texas at Austin graduate students who will deploy business development trainings., and provide physical space and support for US-based project staff.

The LBJ School of Public Affairs at The University of Texas at Austin teaches graduate students skills in organizational development, management consulting, and market research. Through its year-long research program and subsequently as contract employees, students operate as research, training and technology consultants.

Contribution: Graduate consultants will provide innovation trainings covering topics such as technology commercialization and go-to-market readiness, and provide peer mentoring support to Indonesian entrepreneurs. Consultants provide an initial market analysis for the training needs of Indonesian entrepreneurs and researchers.

Sustainability:

The project seeks to establish regional Technology Transfer Offices to recruit talent and innovations in the region. It brings together research centers and incubators, mentors, investors, professionals and entrepreneurs to build entrepreneurial capacity. It seeks to facilitate investment in early stage enterprises to become self-sustaining, based on this greater talent pool in Indonesia.

This project focuses on building skills, knowledge, technology management, and incentive structures among TTOs, partner institutions, and Indonesian entrepreneurs. All trainings delivered by The University of Texas at Austin and IC² Institute will be delivered as Training of Trainers, promoting sustainable channels for knowledge transfer and ongoing training of incoming engineers and entrepreneurs. Indonesian TTOs and partner institutions will be trained in entrepreneurial ecosystem development and encouraged to continually expand their network to scale Indonesia's innovation and entrepreneurial potential.

Increasing the Funder's Impact:

This project will enable Indonesian engineers and scientists to access National Instruments' cutting-edge technologies, along with the provision of IC² training and ecosystem development. It will prepare entrepreneurs to commercialize innovations, scale businesses and create sustainable prosperity in their communities. The core partners of The Indonesia Partnership bring unique expertise and networks in technology, technology transfer and commercialization, business development, and the Indonesia technology sector. Together, these agencies will enhance the entrepreneurial ecosystem in the technology sector in Indonesia, empowering Indonesians to address local challenges with market-based solutions.

E. Private Sector Engagement

National Instruments supports various initiatives that help engineers solve challenging local problems using NI hardware and software platforms. National Instruments is dedicated to empowering engineers around the globe by nurturing local innovation and supporting small and medium enterprises and startups using technology-based innovation and development to accelerate productivity, innovation, and discovery. The company approached the LBJ School of Public Affairs in 2014 to create a plan to support entrepreneurs, capacity-building, and technology transfer capabilities in Indonesia. In June 2015 LBJ School researchers traveled to Indonesia to conduct field research and held planning and partnership meetings. The team of researchers at the LBJ School performed market research on behalf of National Instruments to identify opportunities for technology transfer and entrepreneurship.

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F. Monitoring and Evaluation

This project will monitor the impact of The Indonesia Partnership on participating Indonesian innovators and communities. In the short term, data will be collected at baseline and outputs tracked through Year 2 for participating TTOs. Year 2 will see early outcomes with the use of pre-, post- and three-month follow-up surveys to measure knowledge gained and changes made to new and growing businesses among training participants. Additional indicators will provide an assessment of existing technology use, technology management support, and entrepreneurial activities in the technology sector. During Year 3, outputs will continue to be tracked and outcomes will continue to be realized. Evaluation will focus on the number of business plans written or improved, the number of early-stage enterprises experiencing growth, and the number of entrepreneurs using new technologies and innovations to improve performance. A full assessment will include an analysis of the diffusion of NI technologies and the relative expansion of the entrepreneurial ecosystem in Indonesia, especially that of entrepreneurial activity in the technology sector. The number and amount of business growth, both in terms of revenue and new employees hired, will be evaluated to determine the economic impact of The Indonesia Partnership on families and individuals.

SECTION II. KENYA

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Chapter 6. Technology Entrepreneurship in Kenya

The Choice of Kenya as a Development Focus

This study evaluated seven sub-Saharan African countries to assess their potential for partnerships to encourage technology entrepreneurship: Cameroon, Ethiopia, Ghana, Kenya, Tanzania, Uganda, and Nigeria. The evaluation began with a review of broad macroeconomic, social, political, security, and technology indicators that captured the relative economic performance of each country, as well as the potential of the on-ground business environment. The assessment considered the security risk of different regions in each country, the availability of foreign aid, and the presence of internationally ranked universities. The review considered human capital indicators, such as the number of technology research staff, successful entrepreneurs, and business incubators. The review developed other performance measures of the potential for development of a technology entrepreneurship ecosystem such as the strength of contacts in each country through networks of The University of Texas at Austin, the IC² Institute, and National Instruments. The first step of the analysis was to consider strengths and weaknesses for each country, discussed below. Nigeria was eliminated early in the evaluation process due to the risk of Ebola in late 2014, which reduced the set of options to six countries, which led eventually to the selection of Kenya as the research venue. The national options are discussed below.

Based on these indicators, Kenya is the preferred country for this project and for National Instruments to pursue, due to its strong focus on entrepreneurship, science, and technology. Kenya has weaknesses such as corruption and heightened security and terrorism risks. These risks can be mitigated with the help of existing high level in-country contacts with the government of Kenya. See Appendices 8 and 9 for supportive information and measurement index data gathered from Business Monitor International, Transparency International, QS World University Rankings, World Bank, International Monetary Fund, African Development Bank, and Property Rights Alliance.

Kenya

Kenya stands out from the other five African nations as measured by the strength of its current entrepreneurship ecosystem, as well as its human capital, intellectual property activity, economic prowess, and the existing network of contacts available for potential partnerships. The number of Kenyan research staff in technology and research and development (R&D) is almost four times the combined number for the other five countries.⁵³ The human resources in the technology sector in Kenya are superior in quality and quantity. Human capital is an essential component for developing future technology entrepreneurs equipped with the skills to drive that process forward in the years to come. Active participation in the patent process also sets Kenya apart from the comparison group. For example, from 2000 to 2014, Kenya had 638 patent applications from its residents; the second highest achiever in this category was Uganda with 37 applications.⁵⁴

Kenya has received over \$30 billion in bilateral and multilateral agreements since 2000, which indicates a high level of foreign government and foundation activity.⁵⁵ Kenya has the best

incubator and entrepreneurship ecosystem in the comparison group including 88mph, iHub, FabLab, Strathmore University's iLab Africa, m:Lab East Africa, IBM Innovation Center, Enablis Entrepreneurial Network, Women who Mentor and Innovate (WMI) Africa, and KIRDI. Kenya was home to nine of the Forbes' 2013 list of Top 30 Entrepreneurs in Africa; that such a share in a continent-wide entrepreneurs list indicates relatively high potential for entrepreneurship and a tradition for success.⁵⁶ On the internationally-recognized QS ranking system for global universities, Kenya registers one ranked institution: The University of Nairobi, which also features a Science and Technology Park.

Kenya's comparative weakness is that it has the highest travel and security risk of all six countries.⁵⁷ The risk is higher in the northern part of the country that borders with Somalia, as Kenya is under attack by Boko Haram, a terrorist organization with alleged ties to Al-Qaeda.

Ghana

Ghana has a comparatively long track record of political stability and low travel and security risk. A positive long-term economic outlook has encouraged an increasing level of foreign direct investment (FDI) into the country over the past eight years.⁵⁸ There are several capacity-building development projects focused on technology entrepreneurship funded by the World Bank, USAID, and the African Development Bank. A public-private partnership spearheaded by National Instruments could benefit from and contribute to these development projects' objectives.

Ghana has the lowest security risk in the comparison group, according to the UT travel risk system.⁵⁹ Unrestricted travel is possible for UT staff and students, NI staff, and potential future international partners. Several aid projects focused on capacity-building in entrepreneurship and technology commercialization are in the works to help develop the basis of an entrepreneurship ecosystem. Ghana also hosts the highest levels of foreign direct investment inflows in the comparison group, indicating an investment-friendly business climate. In terms of governance, Ghana also stands out with the best ranking on the Corruption Perception Index in the comparison group.⁶⁰

The IC² Institute recently hosted a representative from University of Ghana's Tech Transfer program for its technology commercialization training, showing active intent from academic institutions in the country to partner with international organizations. The University of Ghana, located near the capital city of Accra, is Ghana's sole ranked institution on the internationally-recognized QS ranking system for global universities and is home to an Institute of Applied Science and Technology.

One barrier to Planet NI's entry to Ghana is the limited nature of NI's involvement, as Ghana was not even on the initial list of countries proposed by NI; it was considered due to its strong economic and political indicators as well as strong ties between the LBJ School and non-profit organizations operating in the country. Low levels of human capital were also perceived as a significant challenge.

Cameroon

One of the key considerations for Cameroon is the existence of strong National Instruments contacts through the Planet NI team and the association of one of Planet NI's staff members with the country. Cameroon also participated in Planet NI's Innovative Design Challenge in 2014. However, Cameroon's political, economic, and security indicators are substantially weaker than the nations within the comparison group. Cameroon's macroeconomic indicators such as GDP per capita, industrialization, and mobile phone penetration are significantly lower than the comparison group. Low levels of aid allocation to non-agriculture capacity building also impose a barrier to future fundraising efforts with international donor agencies. In terms of governance, corruption is a major perceived barrier: Cameroon is ranked worst in the comparison group, 144th of 177 countries on the Corruption Perception Index.⁶¹ There are no universities in Cameroon qualified to be ranked on the internationally-recognized QS ranking system for global universities. According to UT travel guidance, the northern region of Cameroon is currently defined as having high travel risk while the remainder of the country has moderate travel risk.

Ethiopia

Ethiopia is a viable option for Planet NI investment despite its current political and economic challenges. The recent MOU between Planet NI and Addis Ababa University to support technology entrepreneurship could be leveraged as a foothold to engage national and international stakeholders for partnership-building. Compared to the comparison group, human capital indicators in Ethiopia are second only to Kenya, but by a long distance. The high volume of foreign aid, over \$30 billion during 2000-2014, is indicative of the interest of foreign development projects in the country.⁶² Several donor projects focused on capacity-building in entrepreneurship and technology commercialization. Ethiopia's poor economic performance significantly lowers the potential of securing local government funding for potential projects. Low level of technology exports indicate a national economy that focuses on an internal market. None of Ethiopia's universities were ranked on the internationally-recognized QS ranking system for global universities.

Tanzania

Tanzania presents a viable option for NI based on its political, economic and security environment. Tanzania lags behind the comparison group in terms of existing NI contacts. A high level of overall aid allocation (over \$30 billion since 2000) indicates that foreign governments and foundations actively cooperate with the government and local communities on development projects.⁶³ Strong foreign direct investment numbers also indicate similar levels of interest from foreign investors and businesses. Government-run incubators dominate the entrepreneurship ecosystem in Tanzania. While this pattern indicates the government's positive intent, it also raises a question mark on the capacity of private-sector participation. On the internationally-recognized QS ranking system for global universities, Tanzania registers one ranked institution: The University of Dar es Salaam, which is home to almost 20,000 students and a College of Engineering and Technology. Foreign aid is largely allocated to health and agricultural capacity-building, a potential hurdle in terms of future fundraising from international aid agencies for technology-focused projects. Tanzania is classified by the UT travel risk system as a low risk for travel purposes.⁶⁴ A growing security threat linked to spill-over from Kenya is

also a cause of concern in the assessment of the security condition of the country in the years to come.

Uganda

Uganda also is a viable option for NI activity, as it has a strong national focus on promoting the technology sector as part of its development goals. However, Uganda has a high security risk, poor governance, and travel restrictions. Uganda also lags behind the comparison group in key human capital indicators, decreasing its viability as a target country. Uganda's Makerere University is a Planet NI partner and has collaborated in the past for the Innovative Design Competition organized by National Instruments. Students from Makerere University won the 2014 challenge in Uganda. The university is home to 40,000 students and a Center for Technology Design and Development. Export numbers from Uganda indicate a thriving technology industry with a focus on improving its competitiveness in the region.⁶⁵ The Ugandan government is facilitating the growth of technology entrepreneurship through institutes such as the Uganda Management Training and Advisory Center, Uganda Gatsby Trust, Uganda Industrial Research Institute, the Textile Development Agency, and the Presidential Initiative on Banana Industrial Development. High travel and security risks pose potential barriers for UT staff, students, and potential international partners to travel to the country. A poor governance record is also considered a roadblock for effective partnerships with local government institutions: Uganda is ranked 140th on the Corruption Perception Index (a level of high corruption), only scoring better than Cameroon within the comparison group.⁶⁶

Chapter 7. Initial Travel to Kenya

Peter Morrison and Hannah Puckett, on behalf of the six-person team of graduate consultants, traveled to Nairobi, Kenya, from March 11-21, 2015, to conduct preliminary research in the emerging African market. Their objectives were to map the innovation ecosystem that has in recent years attracted international attention as “The Silicon Savanna” and “The Most Intelligent City in Africa;” identify and build relationships with potential stakeholders; understand investment priorities at a regional and national level that align with NI technology offerings and IC² capabilities; and collect video footage to share the opportunities with partners in Texas.

With the guidance of Malcom Morris during the ten day trip, Mr. Morrison and Ms. Puckett held focus groups and interviews with innovation and tech transfer stakeholders from various sectors. They met with students, lecturers, professors, deans, and vice-chancellors at three public and private universities to discuss barriers for converting patents into commercial intellectual property, and educating engineering students about practical problem-solving and wealth-creating entrepreneurship. They met with stakeholders and young entrepreneurs in the startup community at hackerspaces, incubators, accelerators, and development labs. Kenya’s former president, His Excellency Mwai Kibaki, and his staff provided Mr. Morrison and Ms. Puckett with guidance on the challenges to national economic development. They met with a variety of non-governmental organizations and prominent multilateral funding agencies, including representatives of the World Bank and dozens of regional NGOs to understand the funding priorities around water, sanitation, and health. Table 7.1 lists the organizations and contacts met with during the in-country meetings. Appendix 10 contains the meeting summaries and contact information from each organization and contact.

The following sub-sections discuss each key in-country meeting. In each section, any quotations or comments are those from the named individual and do not represent the opinions of any of the sources or institutions involved. Based on the previous research conducted, the following meetings, and the coordination of NI, UT, IC², and the LBJ School graduate consultants, an MOU has been created and included in Appendix 11.

Table 7.1.
Organizations and Contacts from Kenya In-Country Meetings

Organization	Contact
His Excellency, Mwai Kibaki, Third President of Kenya	Dr. Stanley Murage, Advisor Policy and Strategy to former President of Kenya, Mwai Kibaki
Hiroshima University	Dr. Akimasa Fujiwara, Professor and Dean of Graduate School of International Development and Economic Cooperation
iHub UXLab	John Paul M. Karijo, User Researcher
Jomo Kenyatta University of Agriculture and Technology (JKUAT)	Department of Engineering Stakeholders
Jomo Kenyatta University of Agriculture and	Dr. Waiganjo Esther, Department of Entrepreneurship,

Technology (JKUAT)	Technology, Leadership and Management
Jomo Kenyatta University of Agriculture and Technology	Professor G.S. Namusonge, Dean of School of Entrepreneurship
Millennium Water Alliance Kenya, and Aqua for All	Tabitha Garretts
Millennium Water Alliance Kenya (MWAK) and Care International	Doris Kaberia, Water Alliance's Kenya Director
Samuel Owen	Nairobi, Kenya
Strathmore University	iBiz and iLab
University of Nairobi (UoN)	Dr. Kamau Gachigi, Executive Director of Gearbox, UoN's Fabrication Laboratory
University of Nairobi	Professor M. F. Mbithi, Vice Chancellor
University of Nairobi	Professor Mwangi Mbuthia Jackson, Dean of School of Engineering
University of Nairobi and Millennium Water Alliance Kenya	Professor Elijah Omwenga, Computing and Informatics
Water for All	David Kinyanjui, Director, and Zipporah Kinyanjui
World Bank Inter-agency Collaboration Committee Meeting	Kisumu, Kenya

Chapter 8. Opportunities in Kenya

The Kenya component of this project has identified a number of Kenyan institutions that can facilitate the growth and success of technology-based entrepreneurship in the water infrastructure sector and five other sectors: oil and gas, wind power, solar energy, mobile technology, and incubators. The Kenyan institutions that are expected to be partners include universities (such as the University of Nairobi), business incubators, the Kenyan national government (and its 47 counties), and nonprofit organizations (such as the Kenya Millennium Water Alliance). National Instruments activities could be developed through its Planet NI program. The University of Texas at Austin's participation can be channeled through the IC² Institute and the LBJ School. This cooperation can be facilitated through a Memorandum of Understanding among The University of Nairobi (UoN), the Kenya Millennium Water Alliance, National Instruments, and The University of Texas at Austin (see Appendix 11).

Four of the key partner institutions include The University of Nairobi, National Instruments, The University of Texas at Austin and its IC² Institute, and the Millennium Water Alliance of Kenya. The University of Nairobi is the pioneer institution of higher education in Kenya. Based on seven campuses within Kenya's national capital, UoN teaches approximately 36,000 undergraduate, masters, and doctoral students each year in approximately 200 fields—including the natural sciences, applied sciences, technology, humanities, social sciences, and the arts. National Instruments is a \$1.2 billion international company that equips engineers and scientists to meet the challenges of an increasingly complex world. The company's Planet NI program empowers engineers around the globe by nurturing local innovation through supporting small and medium enterprises, start-ups, and other organizations. The program uses technology-based innovation and development to accelerate productivity, innovation, and discovery. The University of Texas at Austin, through its IC² Institute and the LBJ School of Public Affairs, focuses on the theory and practice of entrepreneurial wealth creation, and researches technological innovation as a catalyst to regional economic development through the active and directional collaboration among the university, government, and private sectors. The IC² Institute has been instrumental in Austin's growth as an innovation and technology center and in the development of knowledge-based economies in over 30 countries through its Bureau of Business Research, Global Commercialization Group, and Austin Technology Incubator programs. The Millennium Water Alliance of Kenya (MWAK) is a 501(c)(3) coalition of that includes U.S. charities working to bring clean, safe drinking water and sanitation to millions of Kenya's poorest people. MWAK seeks to advance high standards for program quality, transparency, and accountability, and works with its members to bring to scale effective and sustainable water, sanitation, and hygiene education solutions. MWA is a strong advocate for U.S. leadership in effective foreign assistance, and is part of a global coalition to raise awareness of and commitment to water and sanitation.

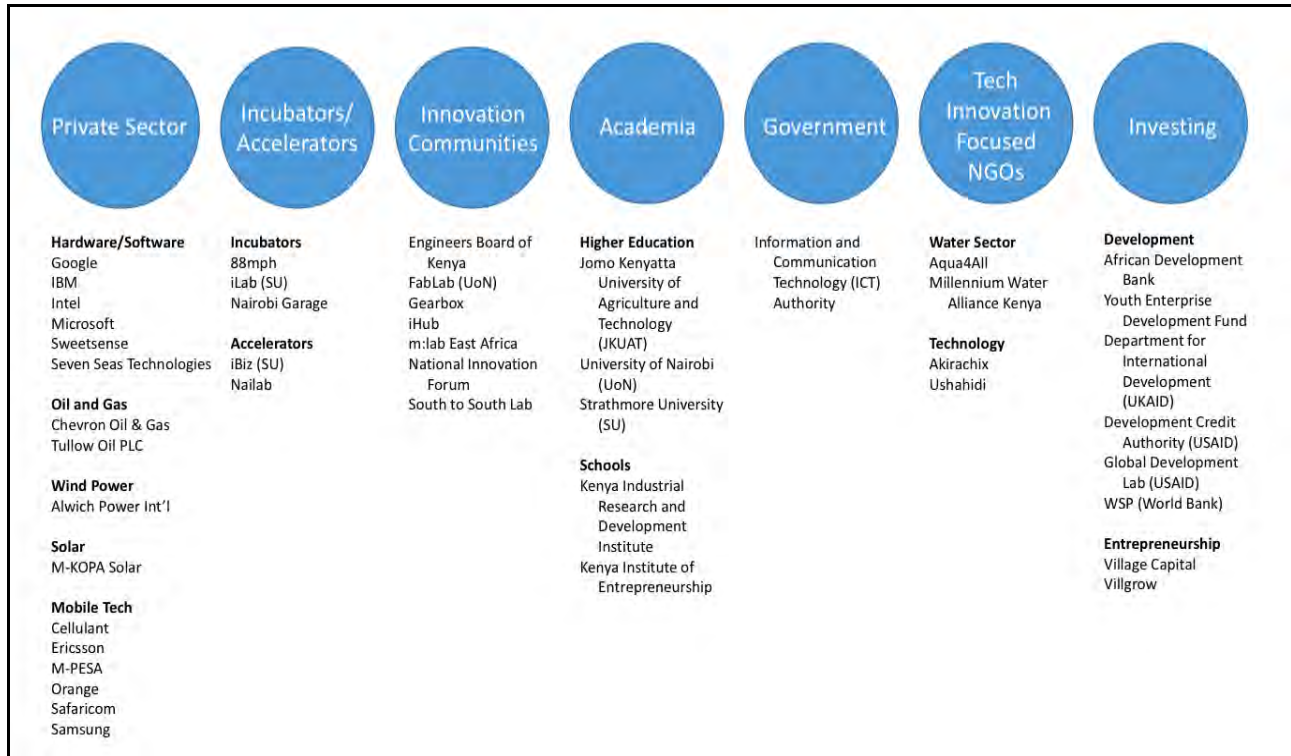
As a team, these organizations represent an innovative public-private partnership that can work together with Kenyan organizations and individuals to develop and expand stable, sustainable, and technologically advanced projects.

Needs and Plans

Kenya, like other developing nations, could benefit from a private-public partnership among institutions seeking to create wealth and employment through enhancement of small to medium enterprises. Over the past decade, Kenya has established a track record of accomplishment in innovative technology, as represented by its pattern of patents and research innovation in universities, primarily UoN. This Kenyan originality and creativity has not been expressed in a comparable flowering of an entrepreneurial culture, which would ideally represent as a community of SMEs deploying scientific and engineering innovation in businesses that can create wealth and employment. There are two reasons for this lag of entrepreneurship: technical capacity and commercialization capacity. Even in 2015, Kenya has a limited availability of hardware and software to empower entrepreneurs to develop their own products and applications as new SMEs. As is known around the world, even the best ideas are not likely to be expressed in the form of successful new businesses without entrepreneurs who understand how to transform technology from the laboratory to the market and commercialize concepts into profitable and sustainable businesses. This proposal seeks to enable and enhance a public-private ecology of institutions seeking to facilitate such SME innovation.

National Instruments representatives and graduate consultants from The University of Texas at Austin traveled to Nairobi in March 2015. There, they met with local leaders to build relationships and discuss the comparative advantage of Kenya's entrepreneurial landscape. The graduate consultants worked with attendees to build a picture of local policy, technological ecosystems, and talent markets. Together, the consultants and local leaders discussed how to enhance technological entrepreneurship in Kenya and overcome any roadblocks to that process. The consultants also met with business, academic, and government groups to discuss the long-term impacts of international technology transfer and its application in Kenya. The discussions focused on protecting and commercializing technology; attracting talent; improving research and design; the Kenyan processes for creating, enabling, adapting and growing SMEs; and building a public-private consortium of institutions that can sustain entrepreneurship in Kenya. The consultants discussed the so-called "ladder of technology," which moves from transfer to adoption, from adoption to adaptation, and from adaptation to creation. The two-way exchange of knowledge focused on the benefits of partnerships between universities, entrepreneurs, and the broader market. It highlighted the benefits of technology transfer offices and the comparative experiences of Kenya and Texas. Figure 8.1 is a conceptual map of institutions that could cooperate in this public-private partnership.

Figure 8.1.
Map of the Kenyan Innovation Ecosystem



Source: Created by graduate consultants at The University of Texas at Austin.

The Kenyan and U.S. participants discussed six business sectors that could lead SME development in Kenya: 1) water infrastructure, 2) oil and gas development, 3) wind power, (4) solar energy, (5) mobile communication technology, and (6) universities and incubators. Fields that are ripe for initial SME commercialization include water infrastructure: water supply, wastewater treatment, water transmission and distribution, as well as assessment and evaluation of water throughout the water system cycle. Appendix 8 reports on these fields in more detail.

Step One: Innovation Readiness Training and Knowledge Exchange

National Instruments' partnership with the LBJ School of Public Affairs and the IC² Institute will allow interested Kenyan individuals and organizations to participate in the Innovation Readiness SeriesTM, an eLearning program that offers training for engineers, researchers, scientists, and entrepreneurs in the key issues for successful commercialization. It is the product of lessons learned in entrepreneurial workshops, technology transfer, and incubator management training in six countries across the globe and over 5,000 technology opportunities.

As trained experts in the commercialization field, the graduate consultants as well as IC² Institute staff can provide comments/feedback on existing business ideas and help screen and identify potential business opportunities. Mentors can also be recruited to address specific issues and

provide advice beyond the core innovation readiness topics. The IC² Institute, together with the LBJ School for Public Affairs, is prepared to facilitate Kenyan participation in a Visiting Scholars Program. Local Kenyan entrepreneurs can visit the IC² Institute and partner with technology leaders in Austin, Texas.

Step Two: Application and Expansion

Graduate consultants and National Instruments staff hope to return to Kenya to pursue partnerships between technology entrepreneurs, academics, government leaders, and key businesses. Working alongside local partners, National Instruments, the IC² Institute, and the graduate consultants will be prepared to teach about tech incubation, technology transfer, and management consulting—while the NI staff will address their own innovative hardware and software. Both NI and UT will work to enhance relationships with groups and businesses. By building these partnerships and leveraging NI technologies, the project will use technology transfer and tech entrepreneurship to deepen and accelerate local initiatives.

By leveraging the partnership between UoN, NI, and UT, the partnership hopes to target entrepreneurship in areas including:

- Water (quality control, instrumentation, and development of new resources);
- Oil and Gas (LAPSSET economic corridor and associated pipeline, rail, and fiber optic development);
- Wind power (turbine development);
- Solar energy;
- Mobile technology (remote monitoring, mobile payments); and
- Universities and incubators;

A successful project will result in (1) a documentary video covering the inception and initial phases of the project; and (2) an ongoing, sustainable relationship between the parties to this proposal and small and medium enterprises in Kenya. That relationship may lead to the development of the following:

- Recurring monthly “roundtables” hosted by the University of Nairobi, at which local SMEs exchange knowledge and consider the ways in which they can leverage NI technologies and UT experience and support;
- Recurring joint academic seminars covering tech innovation and featuring NI technology;
- The creation of a technology lab—usable by local SMEs—at the University of Nairobi;
- Regular exchanges between Kenya-based tech entrepreneurs, professors, and students and NI and UT hosts in Austin, Texas; and/or
- Joint teaching arrangements for postgraduate programs and joint supervision of postgraduate projects.

Potential Sources of Support

Table 8.1 lists institutions as possible sources of financial support for a proposed public-private partnership and for local entrepreneurs. Appendix 12 contains a complete list of funding

opportunities in Kenya. Further research and the follow-up trip to Kenya in August 2015 could identify contacts at each agency as potential funders and/or participants in the NI/UT/UoN partnership.

Table 8.1.
Potential Sources of Support

Institution	Notes	Recommended Contact
World Bank	Multilateral, major funder of Kenyan development work	Nairobi: Peter Warutere (254-20-293-6000, pwarutere@worldbank.org); Washington, DC: Thomas O'Brien (kenyainfo@worldbank.org)
WSP (World Bank Water and Sanitation Program)	Foreign aid; primary funder in water sector in Kenya	Nairobi: 254-20 322 6000/3226334, worldbankwater@worldbank.org
USAID - Development Credit Authority	Bilateral, specific to financing small businesses; uses risk-sharing agreements to mobilize local private capital to fill this financing gap	Washington, DC: Brittany Brown (202-712-0402, brbrown@usaid.gov)
USAID - Global Development Lab	Bilateral, specific to technology transfer	Washington, DC: Brittany Brown (202-712-0402, brbrown@usaid.gov)
African Development Bank	Multilateral, funds diverse projects in Kenya	Cote D'Ivoire: Private Sector Project Director ((225) 20 20 40 57)
Department for International Development (DFID)	Foreign aid; funds water sector and technology projects	UK: Country Programmes Director General Joy Hutcheon (01355 84 4000)
Chinese Investment Promotion Agency	Foreign aid and investment; mostly funds large infrastructure projects	China: 86-10-64239227
Youth Enterprise Development Fund	Kenyan foundation that provides loans to young entrepreneurs and attracts investment to small and medium enterprises	Nairobi: Nairobi Coordinator Joram Murimi Muriuki (+254-020-2654066)
Village Capital	Global foundation that sources, trains, and invests in seed-stage entrepreneurs in Kenya and elsewhere	Washington, DC: Executive Director Ross Baird (ross@vilcap.com)
Villgro	Indian foundation that funds and trains social entrepreneurs; branched into Kenya in 2014	India: +91-44- 66630400, info@villgro.org
Wananchi	Kenyan corporation that provides affordable entertainment and communications (Internet, voice, television, etc.) throughout East Africa; referenced in interviews as source for local start-up capital	Nairobi: CEO Richard Alden (0205200432)
Seven Seas	Seven Seas Technologies Group (SST Group) is a leading provider of integrated business and technology solutions in Kenya and East Africa; referenced in interviews as source for local start-up capital	Nairobi: Founder and CEO Michael Macharia (+254-0711-059-208, ceo@sevenseastech.com)
Cellulant	Kenyan corporation providing one-stop mobile payments and digital commerce service for businesses, mobile network operators, financial institutions and their consumers; referenced in interviews as source for local start-up capital	Nairobi: info@cellulant.com, +254 20 2606696

Source: Created by graduate consultants at The University of Texas at Austin.

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Chapter 9. The Kenya Partnership to Accelerate Entrepreneurship

The following is a draft conceptual proposal to seek financial support for specific subsequent initiatives.

A. Objective of Alliance: The Kenya Partnership to Accelerate Entrepreneurship (The Kenya Partnership) is an alliance among Kenya's University of Nairobi, Millennium Water Alliance of Kenya, and two U.S. organizations: National Instruments, a US\$1.2 billion global company, and The University of Texas at Austin and its research center and business incubator IC² Institute. The Kenya Partnership seeks to strengthen the national ecosystem for innovation, entrepreneurship and SME growth in Kenya's water sector and facilitate the commercialization and growth of technology-based early stage water-sector enterprises.

B. Amount of Funding Requested: \$ XX

C. Value of Private Sector Resource Contributions: \$ XX

D. Description of Proposed Alliance

Statement of Need: Kenya, an African leader in entrepreneurial activity and technology innovation, stands out for its focus on the development of human resources capacity, technology innovation, and intellectual property activity. Kenya's universities lead the continent in number of patents by more than ten-fold. This Kenyan originality and creativity is too often stifled by an incomplete entrepreneurial ecosystem. Early-stage enterprises and SMEs lack sufficient business development training, mentors, and access to capital. Incubators and universities have limited collaboration with private-sector actors, investors, and other stakeholders, and often lack modern hardware and software to empower engineers and scientists to develop and commercialize innovative solutions.

Under its national plan Vision 2030, Kenya established a national priority to provide potable water to all Kenyans by the year 2030. The Kenyan government, international donors, NGOs and private actors are focusing on water quality and flow control, instrumentation, and development and management of water resources. Only 37 percent of Kenyans have access to clean, affordable water and about 47 percent of processed water is lost to "non-revenue" through leaks, theft, and inaccurate measurements. Significant demand exists for innovation and business growth in this sector, especially related to remote control and quality assurance of water points and channels, measuring aquifer use and replenishment, and data collection and sharing on water accessibility and quality.

Objectives: The primary objective of The Kenya Partnership is to demonstrate how human resources related to technology entrepreneurship can strengthen innovation, entrepreneurship and SME growth in Kenya's water sector and facilitate the commercialization and growth of technology-based early staged enterprises. The Partnership will build technical capacities of Kenyan entrepreneurs by improving access to National Instruments' cutting-edge technology and industry-standard training and certifications. The technology transfer will empower Kenyan

engineers and scientists to develop innovative technologies that respond to local needs. The Partnership will provide aspiring Kenyan entrepreneurs with training and mentoring in business development, technology commercialization, and management consulting. It will establish a platform for ongoing collaboration in and development of a robust entrepreneurial ecosystem in the water sector, engaging entrepreneurs and diverse actors from academia and research, the private sector, NGOs, government organizations and investors.

Approach and Activities: The Kenya Partnership proposes a sustainable, measurable, and scalable initiative to enhance the entrepreneurial ecosystem and support the growth of innovation and entrepreneurship in Kenya's water sector. The core activities of this initiative, such as the innovation commercialization training and the transfer of NI technologies, have decades of evidence demonstrating their efficacy. The Kenya Partnership proposes a four phase program to enhance the entrepreneurial ecosystem and facilitate the commercialization of innovative ideas and products to solve local water inefficiencies and grow businesses. Over three years, The Kenya Partnership will provide technology that will facilitate prototype development and improve productivity efficiency. It will train engineers, scientists and other entrepreneurs in technology transfer, entrepreneurship and business development and foster an ecosystem in which researchers, investors, NGOs, private sector and government actors actively collaborate.

Phase I (4 months): Partner Selection and Co-creation of Programming in Kenya

- Deliver initial overview of the water-sector and entrepreneurial ecosystem to established and potential partners in Kenya.
- US partners travel to Nairobi, Kenya to continue market research, networking and partnership development in the entrepreneurial and water-sector ecosystems.
- Establish official partnerships with (3+) Kenyan institutions that wish to establish a Technology Transfer Office (TTO).
- Facilitate in-country planning meetings with Kenya Partnership members and newly selected TTOS. Determine the schedule. Perform strengths assessments of partner institutions, and determine the best use of National Instruments' technologies.
- US partners provide introductory training for partner institutions on how to establish TTOS, innovation commercialization, and methods to bolster the entrepreneurial ecosystem in the water sector.

Phase II (8 months): Training: Technology, Innovation Commercialization, and Ecosystem Development

- Customize business development curriculum based on the needs of partner institutions and Kenyan entrepreneurs. Training may include topics such as protecting and commercializing technology, moving beyond prototypes, managing technology, intellectual property rights, establishing networks, and managing R&D.
- Intensive training and planning can occur either in Nairobi, Kenya, or Austin, Texas.
 - One group of representatives will work primarily with National Instruments to receive training on the technical components of technology transfer and the diverse applications and potential of NI technologies.

- A second group of representatives from the Kenyan Technology Trade Offices will participate in collaborative planning with US partners and receive intensive training on how to establish and manage a successful TTO. IC² Institute's Global Commercialization Group teach best practices in technology commercialization and entrepreneurial ecosystem development in emerging markets.
- A third group of entrepreneurs will participate in the IC² Institute's "Innovation Readiness" training and incubation. Entrepreneurs will receive business development mentoring throughout the training and will leave the program with a plan to take their water-sector innovations to market.
- All parties will participate in training and collaborative planning on opportunities specific to the water sector in Kenya. Millennium Water Alliance representatives and other subject experts will provide training and participate in planning.
- Facilitate Training of Trainers for partner institutions on select trainings such as business development, technology commercialization, and an overview of the Kenyan water sector.

Phase III (Year 2) Technology Transfer, Training and Mentorship

- Introduce National Instruments technologies at Kenyan TTOs.
- NI representatives provide in-country training for users and super-users, and long-term technical support.
- Kenyan partners facilitate ongoing innovation and business development trainings for engineers and scientists.
- NI technology users and super-users provide ongoing training for new users.
- Engage (5+) water sector and (5+) technology and business expert agencies in The Kenya Partnership to supply mentors, practicum hosts, trainers, competition judges, and potential investors. Alternatively, the Partnership may recruit individuals rather than agencies.
- US partners travel to Nairobi, Kenya for partnership and network meetings.
- Launch business and technology mentorship for science and technology researchers and small-scale enterprises.

Phase IV (Year 3): Active Commercialization and Progress Monitoring

- Host a Start-up or Scale-up business competition for technology innovators in Kenya's water sector. Select participants will be offered 6-month intensive mentorship and incubation experiences.
- Partner TTOs screen businesses, conduct Quicklook® assessments, support business model development, and establish go-to-market strategies.
- Partner TTO representatives trained in Phase III provide ongoing training for scientists, engineers, and entrepreneurs in technology commercialization and NI technologies.
- Ongoing mentorship from National Instruments, IC², and in-country business mentors.
- Analyze scaling potential and develop plan for expansion.

Outputs, Outcomes, and Impact: **Figures will change based on the amount requested*

Outputs

Phase I:

- (3+) Partner institutions incorporate NI technologies into their laboratories.
- (5+) Potential Technology Transfer Offices assessed.
- (1) Signed MOU with each partner institution.
- (3+) Introductory training programs on select topics facilitated for TTO representatives.

Phase II:

- (4) Customized trainings for Kenyan engineers and entrepreneurs.
- (2+) Representatives from each partner TTO participate in intensive US-based training.
- (2+) Representatives from each partner TTO participate in select Training of Trainers.

Phase III:

- (3+) Technology Transfer Offices established and working with NI technologies.
- (60+) Startups assessed.
- (50+) Kenyan engineers and scientists have access and are trained on NI technologies.
- (50+) Kenyan engineers and entrepreneurs are trained in innovation commercialization.
- (15+) Specialized training and networking events hosted by TTOs for entrepreneurs.
- (5+) Internships created.
- (25+) New or improved business plans.
- (20+) Business and subject-matter experts signed on as mentors.

Phase IV:

- (100+) Kenyan engineers and scientists have access and are trained on NI technologies.
- (100+) Kenyan engineers and entrepreneurs are trained in innovation commercialization.
- (30+) Specialized training and networking events hosted by TTOs for entrepreneurs.
- (10+) Internships offered/created.
- (25+) New or improved business plans.
- (30+) Business and subject-matter experts signed on as mentors.
- (1+) Innovation competition held in Kenya's water sector for up to 100 participants, with significant national news and social media attention.

Project Outcomes

- (150+) Entrepreneurs experience increased knowledge and skills in business development.
- (100+) Pitch opportunities between investors and program participants.
- (35 percent) Increase in invention disclosures within partner universities.
- (100 percent) Increase in revenue among program graduates.
- (5+) Spin-off businesses from partner universities into the water sector.
- (150+) New employees hired by program graduates.
- (10+) Program graduates' SMEs using NI technologies.

Project Impact

The Kenya Partnership seeks to empower engineers, scientists, and small-scale enterprises with the technology, business development support, and access to a thriving entrepreneurial ecosystem. After three years, this project expects to see wealth creation among its program graduates by way of steadily increasing business revenue, exposure to and acquisition of foreign investments and local venture capital, more employees hired at graduates' enterprises, and increased household income. These indicators will allow for a comparison to baseline measures. Additional long-term benefits will be realized in the water sector, where small-scale enterprises are providing market-based innovations that solve local inefficiencies, keeping Kenyan families from accessing clean and affordable water. A final long-term impact of the project will be the diffusion of NI technologies into Kenyan companies in the water sector and beyond.

Core Partners: This four-phase program will involve five participating institutions:

National Instruments and Planet NI: National Instruments is a US\$1.2 billion international company that equips engineers and scientists to meet the challenges of an increasingly complex world. The company's Planet NI program empowers engineers around the globe by nurturing local innovation and supporting small and medium enterprises, startups, and other organizations, using technology-based innovation and development to accelerate productivity, innovation, and discovery. National Instruments' proprietary platform (LabVIEW system) helps design programs that work to acquire and analyze measurement data and support instrument control, embedded control and monitoring systems, and automated test, and validation systems.

Contribution: Planet NI will provide technical hardware and its core software, LabVIEW, to advance the innovation capacity of (3+) Kenyan institutions. National Instruments will also provide training and mentoring on their technologies, and maintenance to build the capacities of Kenyan entrepreneurs and researchers. Its contribution will result in the dissemination of National Instruments' technologies and increase the number of academic spin-offs, leading to the sustainable development of an entrepreneurial ecosystem and wealth creation in Kenya.

The University of Nairobi (UoN) is the pioneer institution of higher education in Kenya. Based in seven campuses within Kenya's national capital, UoN teaches 36,000 undergraduate, masters and doctoral students each year in over 200 fields ranging from the natural sciences, applied sciences, technology, humanities, social sciences and the arts. UoN has several business incubators and innovation hubs on campus, and is dedicated to expanding its role in the national entrepreneurial ecosystem and producing engineers and scientists with market-ready innovations and entrepreneurial skills.

Contribution: The University of Nairobi will provide physical space for student researchers and entrepreneurs, meeting and training space for partners, entrepreneurs and other stakeholders, and office space for early stage enterprises. Additionally, UoN will use its reputation and existing network to engage the Kenyan government and other stakeholders in the entrepreneurial ecosystem.

The Millennium Water Alliance—Kenya Program (MWA-KP) is a USAID-funded public-private partnership working to provide safe water, improved sanitation, and hygiene education

(WASH) to areas of rural Kenya impacted by drought and climate change. With the objectives of reducing water-borne illness, promoting integrated water resource management to improve livelihoods, and developing partnerships with beneficiary communities for improved sustainability, MWA-KP is part of the Millennium Water Alliance (MWA), a global coalition of leading WASH-focused relief and development organizations such as CARE International, World Vision, and Water.org, and funded by diverse actors such as Coca-Cola and John Deere.

Contribution: The MWA-KP will engage its own network of NGOs, private companies, and government actors in The Kenya Partnership and the wider entrepreneurial ecosystem. Business and water-sector experts from the Millennium Water Alliance will serve as mentors and potential investors, and MWA members will host interns and provide opportunities for innovations to be piloted in the water sector.

The IC² Institute is an interdisciplinary research unit of The University of Texas at Austin that works to advance the knowledge-based theory and practice of entrepreneurial wealth creation around the world. It offers business incubation, international business development curriculum, which focuses on themes like innovation readiness and entering market strategies. The Institute has investigated best practices in over 25 nations and deployed programs providing training, building capacity, and actively assisting business growth through business engagement, capital acquisition and product development.

Contribution: The IC² Institute's subject expertise and evidence-based methods will help the program achieve its objectives of training, technology transfer, and startups assessments in Kenya. The Institute will serve as expert mentors to University of Texas at Austin graduate students who will deploy business development trainings, and provide physical space and support for US-based project staff.

The LBJ School of Public Affairs at The University of Texas at Austin teaches graduate students skills in organizational development, management consulting, and market research. Through its year-long research program and subsequently as contract employees, students operate as research, training and technology consultants.

Contribution: Graduate consultants will provide innovation trainings covering topics such as technology commercialization and go-to-market readiness, and provide peer mentoring support to Kenyan entrepreneurs. Consultants provide an initial market analysis for the training needs of Kenyan entrepreneurs and researchers.

Sustainability:

The project seeks to establish regional Technology Transfer Offices to recruit talent and innovations in the region. It brings together research centers and incubators, mentors, investors, professionals and entrepreneurs to build entrepreneurial capacity. It seeks to facilitate investment in early stage enterprises to become self-sustaining, based on this greater talent pool in Kenya.

This project focuses on building skills, knowledge, technology management, and incentive structures among TTOs, partner institutions, and Kenyan entrepreneurs. All trainings delivered by The University of Texas at Austin and IC² Institute will be delivered as Training of Trainers,

promoting sustainable channels for knowledge transfer and ongoing training of incoming engineers and entrepreneurs. Kenyan TTOs and partner institutions will be trained in entrepreneurial ecosystem development and encouraged to continually expand their network to scale Kenya's innovation and entrepreneurial potential.

Increasing the Funder's Impact:

This project will enable Kenyan engineers and scientists to access National Instruments' cutting-edge technologies, along with the provision of IC² training and ecosystem development. It will prepare entrepreneurs to commercialize innovations, scale businesses, and create sustainable prosperity in their communities. The core partners of The Kenya Partnership bring unique expertise and networks in technology, technology transfer and commercialization, business development, and the Kenya water sector. Together, these agencies will enhance the entrepreneurial ecosystem in the water sector in Kenya, empowering Kenyans to address local challenges with market-based solutions.

E. Private Sector Engagement

National Instruments supports various initiatives that help engineers solve challenging local problems using NI hardware and software platform. The company approached the LBJ School of Public Affairs in 2014 to create a plan to support entrepreneurs, capacity building, and technology transfer capabilities in sub-Saharan Africa. The team of researchers at the LBJ School performed market research on behalf of National Instruments to identify Kenya as a country ripe with opportunity for technology transfer and entrepreneurship. In March 2015 LBJ School researchers traveled to Kenya to conduct field research and were joined by an NI representative during planning and partnership meetings. National Instruments is dedicated to empowering engineers around the globe by nurturing local innovation and supporting small and medium enterprises and startups using technology-based innovation and development to accelerate productivity, innovation, and discovery.

Contact: Jimmy Hwang

Email: jimmy.hwang@ni.com

Address: National Instruments, 11500 N Mopac Expy, Austin, TX, 78759

F. Monitoring and Evaluation

This project will monitor the impact of The Kenya Partnership on participating Kenyan innovators and communities. In the short term, data will be collected at baseline and outputs tracked through Year 2 for participating TTOs. Year 2 will see early outcomes with the use of pre-, post-, and three-month follow-up surveys to measure knowledge gained and changes made to new and growing businesses among training participants. Additional indicators will provide an assessment of existing technology use, technology management support, and entrepreneurial activities in the water sector. During Year 3, outputs will continue to be tracked and outcomes will continue to be realized. Evaluation will focus on the number of business plans written or improved, the number of early stage enterprises experiencing growth, and the number of entrepreneurs using new technologies and innovations to improve performance. A full assessment will include an analysis of the diffusion of NI technologies and the relative expansion

of the entrepreneurial ecosystems in Kenya, especially that of entrepreneurial activity in the water sector. The number and amount of business growth both in terms of revenue and new employees hired will be evaluated to determine the economic impact of The Kenya Partnership on families and individuals.

SECTION III. APPENDICES

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Appendix 1. Supportive Information—Indonesia

National Instruments and Planet NI

Planet NI, a signature program of National Instruments, empowers engineers by providing increased access to NI technology, expertise, and mentorship. The program offers:

- Technical hardware and platforms for data acquisition, automated testing, embedded control and monitoring, industrial communication buses, instrument control, and educational purposes;
- Software such as NI LabVIEW, NI LabWINDOWS, and Measurement Studios, which synchronize and visualize data from inputs in any format and language;
- Expertise in technology operations and maintenance, as well as in technology startups and business development;
- Mentorship specific to engineers in entrepreneurship; and
- Capacity-building for new enterprises.

The IC² Institute

The IC² Institute is an interdisciplinary research unit of The University of Texas at Austin that works to advance the theory and practice of entrepreneurial wealth creation. The institute offers:

- Counseling and support with respect to business strategy, operational guidance, and infrastructure development;
- Student mentorship and research programs;
- Training in technology commercialization;
- Access to proven, effective curriculum for international business development;
- Applied economic research and data collection;
- Nonpartisan analysis of economic trends;
- Business wisdom from 160 IC² Institute Fellows undertaking groundbreaking research on regional economic development and entrepreneurship worldwide;
- Advanced commercialization training and tools for technology assessment;
- An Innovation Readiness curriculum to train entrepreneurs in go-to-market strategy;
- Access to capital through an international network of angel investors and venture capitalists; and
- Worldwide reach, with a presence in over 30 countries to date.

Graduate Consultants at The University of Texas at Austin

Graduate consultants at the Lyndon B. Johnson School of Public Affairs are experts in management consulting, organizational training, and market research. Specifically, these consultants can provide:

- Knowledge and years of experience working in entrepreneurial development in developing countries;
- Expertise in innovation policies within developing countries;
- Management consulting services related to organizational development, technology innovation and transfer, gap analysis, needs assessments, finance, human resources, development, fundraising, and sustainability;
- Marketing and market research services including market size assessments, consumer market identification, primary research planning and execution, product design, brand planning, and regional and international communications strategy; and
- Experience in organizational training and leader mentorship.

Contact Information for Proposed Partners

National Instruments

Jimmy Hwang, Marketing Manager: Emerging Markets
jimmy.hwang@ni.com, 512-683-6623

Since 1976, National Instruments has supplied engineers and scientists with the necessary supplies to solve some of the world's most complex problems. The company has operations in more than 40 countries, and its technologies are used by over 35,000 companies in applications from healthcare to automotive. Planet NI holds 11 active partnerships with government agencies, incubation labs, and nonprofit organizations. In February 2013, NI and USAID jointly initiated a public-private partnership project, Partnerships for Enhanced Engagement in Research (PEER) Science Program. With support from USAID, Planet NI supports the development of entrepreneurship in more than 80 developing countries.

IC² Institute

Robert Peterson, PhD, Director of IC² Institute and Associate Vice President
rap@austin.utexas.edu, 512-471-9438

The IC² Institute has more than 35 years of experience in over 30 countries and has provided capacity-building training related to technology transfer and commercialization. Within public-private partnerships, the IC² Institute traditionally serves as the implementation partner. It often works with local government in-country to provide training that results in long-term knowledge transfer and sustainability in programming. The Institute has worked with USAID in the past to impart Russian technology commercialization and incubator training programs through its Austin Technology Incubator.

The Lyndon Baines Johnson School of Public Affairs

David Eaton, PhD, Professor
eaton@austin.utexas.edu, 512-471-8972

The LBJ School of Public Affairs is one the country's premier policy schools and housed in the highly reputable University of Texas at Austin. The LBJ School historically holds relationships with USAID through its AidData Center for Development Policy, which is a faculty-student research program that aims to increase global aid transparency.

Appendix 2. Concept of an Economic Corridor

Concept of an Economic Corridor

Economic corridors aim to attract investment and generate economic activities in a region to realize the economic development potential of a given region with essential features of lower distribution costs and improved land acquisition.⁶⁷ Physical links and logistics facilitation are key elements towards achieving these aims. Physical connectivity between the centers of economic growth will be significantly developed upon massive investments in infrastructure. Moreover, improved infrastructure, partnered with cross-border cooperation among neighboring countries or regions, can accelerate the process of integrating the country's economic corridors into the global market. Successful implementation of economic corridors requires strong political will with the placement of appropriate infrastructure as well as streamlined competitive regulations to facilitate the movement of goods and people. The Asian Development Bank's definitions of an Economic Corridor includes a well-defined geographic area which includes transport arteries such as roads,⁶⁸ rail lines, or canals; bilateral initiatives and strategic centers, particularly at border crossings between two economies; and physical planning and infrastructure development within the corridor and surrounding areas.

Economic Corridors in Indonesia

Growth centers, connectivity, and infrastructure are the main building blocks of the Indonesian Economic Corridors.⁶⁹ Economic growth centers may include industrial clusters and special economic zones (SEZ) in each economic corridor in line with the local potentials and specializations of each region. For instance, the MP3EI identifies Kalimantan as an energy hub, Bali as a tourism hub, and Sumatra as an agro-industry center. These different types of economic activities need to be accompanied by improved connectivity and infrastructures links.

Connectivity among regions should be developed to accelerate and expand economic development to facilitate the movement of goods and services across economic corridors. Connectivity infrastructures such as construction of transportation routes and information and communication technology (ICT) within and across the regions will reduce transportation and logistical costs. Infrastructure improvements in roads, seaports, airports, water, energy and electricity, and others are also needed according to the economic activity required in the main industrial clusters. Infrastructures ought to be of high quality if a competitive final product is desired. In addition, the provision of the various infrastructures across the corridors will need a pool of skilled workers who are experts for each type of economic activity.

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Appendix 3. Lessons Learned from the East-West Economic Corridor 2001 Strategy and Action Plan

1. Rather than implementing wide-ranging initiatives, a few targeted initiatives comprising of well-defined areas are more likely to be implemented.
2. Successful realization of cross-border investments was hindered by problems in good governance and corruption; existence of adequate infrastructure; clear and responsive policies on foreign investment; the establishment of well-functioning industrial zones; and integration of small and medium enterprises into value-chain activities along the poorer areas of the East-West Economic Corridor (EWEC). Moreover, activities related to private-sector promotion were carried out by the GMS Business Forum.
3. There are remaining difficulties in evaluating the EWEC performance in terms of its impact on cross-border economic activity due to data limitations and lack of transparency. Moreover, there is an absence of benchmarks and standards for assessing the performance. As such, it remains challenging for member countries to develop ownership, oversight, and accountability on the progress of turning the EWEC into an economic corridor.
4. The EWEC developments have strong linkages to National Development Plans and provincial development strategies of all member countries. It is viewed as a key strategy for national and regional development. Linkage can be integrated into an action plan, both in terms of implementing mechanisms and establishing benchmarks and performance measures.
5. Reduction of border costs is important as much as developing EWEC physical infrastructure because connecting inter-country provinces with highways is not sufficient to facilitate the movement of goods and people. To maximize the benefits of infrastructural developments, reductions in border costs ought to take place to enhance the potential impact on the geographic distribution of populations, raise income levels, and boost development of industries.
6. Creating partnerships can be challenging, as opportunity gaps still exist between public and private sectors, in establishing economic activities across borders, in value chains, and among development partners and NGOs.
7. As formulating comprehensive plans and roadmaps is still not a mainstream practice, there is a need for improving a planning approach for every sector and across sectors, linking support sectors with leading sectors.
8. The lack of adequate statistical information made it difficult to assess progress and achievements of the EWEC over the last ten years on the transformation of the transport corridor into an economic corridor. Investment and cross-border trade data are difficult to obtain. Where available, it would definitely identify bottlenecks to further progress and improve monitoring and evaluation of achievements. An effective monitoring and evaluation framework for the EWEC containing benchmarks and quantifiable targets would be useful, as would indicators as part of evaluation reports.^{70,71}

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Appendix 4. Names and Locations of Indonesian Partners

Name	Position	Location
Catharina Badra Nawangpalupi	Director of Global Entrepreneurship Monitor Indonesia, well connected in Bandung.	Bandung
Gibran Chuzaefah Amsi El Farizy	Entrepreneur of the year Indonesia, ITB alum, Global Shapers	Bandung
Angelyn Ardiwinata	Executive Director- Global Entrepreneurship Program Indonesia	Jakarta
Adryn Hafizh	Kolaborasi, Startup Bandung, 1st place winner Startup Jakarta	Bandung
Agnes Safford	Green Works Asia/ American Chamber of Commerce to Indonesia	Skype
Lin Neumann	American Chamber of Commerce to Indonesia	Jakarta
Tri Mumpuni	CEO of IBEKA, hydropower, Ashden Award winner	Jakarta
Mutiara Leoma Marva	Cofounder Kolaborasi	Bandung
Donald Crestofel Lantu	ITB- CIEL and Business School	Bandung
Aulia Halimatussadiah (Ollie)	Startup Lokal	Jakarta
Kaspar Zhou	500 Startups	Jakarta
Kelly Gibbons	USAID contractor- SME in ASEAN	Jakarta
Agis Hery Antasari	Bandung Smart City Initiative	Bandung
Indra Purnama	Bandung Digital Valley Project	Bandung
	ASEAN	Jakarta
Gallant	US Embassy in Jakarta	Jakarta
Gina Sergina	International Development professional	Jakarta
Sati Rasuanto	Endeavor Indonesia	Jakarta
Emi	Ciputra Foundation	Jakarta
Yanuar Firdaus.	Bandung City Hall- Smart cities foundation	Bandung

Source: Created by graduate consultants at The University of Texas at Austin.

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Appendix 5. Additional Indonesia Interviewees and Potential Contacts

Vicki Wijaya, USAID HELM: Vicki works with USAID and can give us a better idea of the types of higher education projects that they intend to support in the future, as well as current partnerships. She also plans to put us into contact with additional USAID projects.

Yohan Totting: He has past experience at the World Bank and may connect us with others at WB. Additionally, he can give insight into business competitions.

Mutiara Leoma Marva, Startup Bandung: She is part of the planning committee for Startup Bandung, which is a business competition that operates worldwide, and we would like to understand more about the potential for expanding these competitions as well as more on their opportunities and a challenges in operating competitions in Indonesia.

Additional Potential Contacts:

- Nita Caroline, ICT Division
- Christine Mugia, Foreign Corporation Strategy
- Hanni Nurrossani, SME Division
- Taufiq Opich, Economic Division
- Gumulan, Environmental Management Board

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Appendix 6. Potential Funders in Indonesia

Indonesian Grantmakers

Grantmaker Name	Contact	Country	Telephone	E-mail	URL
Charity Projects	Mr. Colin Simon	England		info@comicroelief.com	http://www.comicroelief.com
City and Guilds of London Institute	David Miller	England		david.miller@cityandguilds.com	http://www.cityandguilds.com
Eaton Corporation Contributions Program	William B. Doggett, Sr. V.P., Public and Community Affairs	United States	(216) 523-4944	barrydoggett@eaton.com	
Hess Corporation Contributions Program		United States	(212) 997-8500		http://www.hess.com/sustainability/socialresponsibility/default.aspx
International Fellowships Fund	Joan Dassin, Exec. Dir.	United States	(212) 883-8200		http://www.fordifp.org
Islamic Relief Worldwide	Mr. Javed Akhtar	England		middleeast@irworldwide.org	http://www.islamic-relief.com
Kelola Foundation		Indonesia		info@kelola.or.id	http://www.kelola.or.id/
New Covenant K. G. Foundation		United States			
Obor Berkas Indonesia Foundation		Indonesia		obi.partners@cbn.or.id	http://www.obi.or.id/
Ummah Global Relief		England		info@ummahglobalrelief.com	http://www.ummahglobalrelief.com
Unilever Indonesia Foundation		Indonesia			http://www.unilever.co.id/aboutus/yayasanunileverindonesia/
Yayasan Dian Desa		Indonesia		secretariat.yogya@diandes.org	http://diandes.org/Home.html
YKIP Foundation		Indonesia		info@ykip.org	http://www.ykip.org/

Source: Foundation Directory Online, Regional Foundation Library (2014).

Existing Indonesia-Focused Grants

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
American Jewish World Service	NY	Pusat Pemberdayaan Perempuan	Banda Aceh	2009	\$30,000	For Alternative Media and Awareness of Women's Issues
American Jewish World Service	NY	Flower Aceh	Banda Aceh	2009	\$32,000	For Empowerment Program for Women Tsunami Victims; To improve women's health by raising awareness of and access to holistic and herbal medicines; and to develop income-generating activities for women through training in medicinal herb cultivation and holistic health practices. To improve women's health through awareness of and access to holistic health and herbal medicines and to develop income-generating activities for women through training in medicinal herb cultivation and holistic health practices
American Jewish World Service	NY	Yayasan Keumala	Lhokseumawe	2009	\$25,000	For Microfinance Program in Tsunami and Conflict-Affected Communities; To extend microcredit and provide livelihood skills training to women victims of the tsunami
American Jewish World Service	NY	Yayasan Pengembangan Kawasan	Jakarta	2009	\$42,000	For Sustainable Livelihood Program for Tsunami Affected Communities; To strengthen economic development by providing access to credit, facilitating business networks, researching market opportunities and advocating for market reform and government support of livelihoods
American Jewish World Service	NY	Forum Bangun Aceh	Banda Aceh	2009	\$30,000	For Tsunami Survivors Livelihood Program, micro-enterprise development; To establish sustainable livelihoods by providing community members with access to credit and business skills trainings
American Jewish World Service	NY	Pusat Pemberdayaan Perempuan	Banda Aceh	2009	\$5,200	For Journalism Training - OD
American Jewish World Service	NY	Forum Bangun Aceh	Banda Aceh	2011	\$15,000	For FBA to strengthen staff capacities in organization management, program design and methodology, report writing and monitoring and evaluation
American Jewish World Service	NY	Pusat Pemberdayaan Perempuan	Banda Aceh	2011	\$10,000	To allow Beujroh to send one of its staff members to a journalism internship, and to provide staff trainings in program planning, fundraising, marketing and distribution, and organizational development
American Jewish World	NY	Yayasan Pengembangan Kawasan	Jakarta	2011	\$40,000	To promote economic and livelihood recovery in tsunami-

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
Service						affected communities in Aceh by strengthening YPK's community-based microlending institutions (LEMs). The LEMs will be strengthened through research, workshops, monitoring and evaluation, information sharing and exposure visits, and efforts to increase market linkages
American Jewish World Service	NY	Pusat Pemberdayaan Perempuan	Banda Aceh	2010	\$30,000	For Beujroh to empower Acehese women by investigating and publicizing issues affecting women including GBV, low political participation, limited access to information, the recent adoption of Shariah law and the reintegration of former separatist rebels and sympathizers in Aceh; With this grant, Beujroh will promote women's access to media through the publication of the monthly women's newspaper Bungong, Aceh's only newspaper focused on women's issues
American Jewish World Service	NY	Yayasan Keumala	Lhokseumawe	2010	\$25,000	To support Acehese people, particularly women and other marginalized groups, as they rebuild their lives post-tsunami. With this grant, Keumala will strengthen its Keumala Micro Finance Institution (KMF) and ensure the sustainability of its revolving loan fund by establishing a cafe that sells goods produced by beneficiaries of KMF
American Jewish World Service	NY	Himpunan Serikat Perempuan	Lubukpakam	2010	\$40,000	To support subsidiary women's empowerment and community development organizations through a series of trainings for members of each organization; Training topics include social and economic rights, advocacy skills and strategy and microlending management and implementation; It supports school expenses for disadvantaged children of Hapsari members
The Coca-Cola Foundation, Inc.	GA	Yayasan Bina Usaha Lingkungan	Jakarta	2010	\$100,000	For Water and Sanitation for a Sustainable Community Program
The Coca-Cola Foundation, Inc.	GA	Pos Keadilan Peduli Umat	Jakarta	2009	\$76,000	
The Coca-Cola Foundation, Inc.	GA	Yayasan Bina Usaha Lingkungan	Jakarta	2012	\$125,325	For Community-Based Water and Sanitation in Cihanjuang Village, Sumedang District, West Java
The Coca-Cola Foundation, Inc.	GA	Jaringan Kesejahteraan/Kesehatan Masyarakat	North Sumatra	2012	\$224,978	To Replenish Raw Water Resources as Climate Change adaptation measure for Sibolangit Spring, Medan area, Indonesia
Ford Foundation	NY	People, Resources and Conservation Foundation		2005	\$80,000	To train Dayak women in traditional weaving techniques and to develop managerial capacity for weaving cooperative

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
Ford Foundation	NY	National Commission on Violence Against Women	Jakarta	2005	\$60,000	For work to rebuild women's human rights and promote women's legal and economic empowerment in post-tsunami Aceh
Ford Foundation	NY	Yayasan Duta Awam	Sala	2005	\$100,000	For community-based monitoring of agriculture development projects and institutional strengthening of farmer federations in selected provinces
Ford Foundation	NY	Yayasan Indonesia Business Links	Jakarta	2005	\$350,000	For general support to promote corporate social responsibility and raise awareness of good corporate governance practices throughout business sector in Indonesia as they relate to sustainable development
Ford Foundation	NY	International NGO Forum on Indonesian Development	Jakarta	2005	\$600,000	For tie-off general support to monitor international financial institutions in Indonesia and conduct research, training and advocacy on debt issues
Ford Foundation	NY	Akatiga Foundation	West Java	2005	\$600,000	For tie-off general support for cross-cutting research on rural poor, urban transformations and urban-rural links
Ford Foundation	NY	Akatiga Foundation	West Java	2004	\$185,000	For general support for research and applied policy analysis on agrarian issues, labor, small-scale enterprises and local-level democratization
Ford Foundation	NY	Yayasan Lembaga Binakelola Lingkungan		2004	\$75,000	For participatory community-based natural resources management planning in East Kalimantan
Ford Foundation	NY	Consortium for Study and Development of Participation	Lombok	2004	\$102,500	To strengthen local community organizations and promote incentives and compensations for environmental services
Ford Foundation	NY	Indonesia Center for Sustainable Development	Jakarta	2004	\$50,000	For professional development and leadership training in environmental management
Ford Foundation	NY	Economic and Human Resource Development Institute	Jakarta	2004	\$79,000	For historical review and analysis of teacher education in Indonesia
Ford Foundation	NY	Foundation for Sustainable Development	Jakarta	2004	\$187,000	To promote environmental leadership in Indonesia
Ford Foundation	NY	Environmental Law Alliance Worldwide Indonesia Foundation	Jakarta	2005	\$50,000	For general support for research, paralegal training, public education and other activities to encourage fair and just management of natural resources for the public
Ford Foundation	NY	Institute for Policy and Community Development Studies	Jakarta	2006	\$133,300	For action research program on accountability and transparency of public service delivery in five local governments
Ford Foundation	NY	Combine Resource Institution	Yogyakarta	2009	\$450,000	To develop capacity of Suara Komunitas grassroots media resource infrastructure to

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						strengthen voice of marginalized groups in public discourse and decision-making policies; Foundation supplied information indicates that focus of grant is for women
Ford Foundation	NY	KOBUS Foundation	Sintang	2009	\$50,000	For final support to promote sustainable strategies for indigenous Dayak weaving cooperatives
Ford Foundation	NY	Yogya Institute of Research, Education and Publications	Sleman	2009	\$328,267	To help poor women in district of Bantul, Yogyakarta, establish savings associations and participate in planning and budgeting at village and district level
Ford Foundation	NY	University of Indonesia	Depok	2006	\$450,000	For Center for Health Research, to provide technical assistance to and promote links in development thinking and practice among sexuality and reproductive health and environment and development NGOs
Ford Foundation	NY	Yayasan Bina Usaha Lingkungan	Jakarta	2006	\$300,000	To promote capacity development, financial literacy and public awareness in natural resource-related recovery activities in post-Tsunami areas of Indonesia
Ford Foundation	NY	Center for International Forestry Research	Bogor	2006	\$500,000	To promote environmental leadership and research on business social responsibility within decentralized natural resource management in Indonesia
Ford Foundation	NY	Yayasan PIRAC	Jakarta	2007	\$320,000	For research, training, technical assistance, publications and outreach to promote philanthropy in Indonesia for women's empowerment
Ford Foundation	NY	Indonesian Environmental Forum	Jakarta	2006	\$200,000	To build WALHI Institute's capacity to promote information-based environmental advocacy, develop knowledge base on environmental issues and produce publications on environmental justice issues
Ford Foundation	NY	Indonesia, Government of the Republic of	Jakarta	2009	\$388,000	To coordinate Ministry for People's Welfare's to institutionalize participation of poor and marginalized groups in formulation of local poverty alleviation strategy
Ford Foundation	NY	Association for Community Empowerment	Jakarta	2009	\$580,000	For training and workshop to facilitate participation of poor women in public decision-making institutions for fulfillment of their basic rights in education, health and livelihood
Ford Foundation	NY	University of Indonesia	Depok	2009	\$973,500	To form multi-disciplinary teams to analyze, monitor and evaluate implementation of three formal social protection policies and programs in Indonesia

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
Ford Foundation	NY	Institute for Research and Empowerment	Yogyakarta	2009	\$885,000	For training, technical assistance, advocacy, networking and documentation to institutionalize participation of marginalized populations in public decision making on health, education and livelihoods
Ford Foundation	NY	Yayasan Integrasi Edukasi	Tangerang Selatan	2008	\$300,000	For workshops, seminars and other activities to build institutional capacity of environmental NGOs and NGO networks and increase their transparency and accountability
Ford Foundation	NY	Yayasan KEHATI	Jakarta	2008	\$200,000	To promote public discussion of and civil society involvement in climate justice issues
Ford Foundation	NY	Trisakti University	Jakarta	2007	\$350,000	To promote research and curriculum development on corporate social and environmental responsibility in Indonesia
Ford Foundation	NY	World Wide Fund for Nature-Indonesia	Jakarta	2007	\$200,000	For Photovoices, project to provide villagers and facilitators with training in participatory research and photography as tools for social action and community engagement
Ford Foundation	NY	Consortium for Study and Development of Participation	Lombok	2008	\$200,000	For Rewards and Incentives Program to encourage resource conservation and improve livelihoods in Lombok and to build capacity of local multi-stakeholder forum to manage environmental resources
Ford Foundation	NY	Yayasan Indonesia Business Links	Jakarta	2008	\$125,000	To serve as corporate social responsibility resource center for Indonesia and for workshops, awards and publications promoting socially and environmentally responsible business practices
Ford Foundation	NY	Perkumpulan Pancur Kasih	Pontianak	2007	\$300,000	To build Dayak people's capacity to secure their rights over, strengthen governance of and explore opportunities to gain environmentally sustainable benefits from indigenous community lands
Ford Foundation	NY	Natural Resources Law Institute	Jakarta	2004	\$200,000	To promote transfer of forest and other natural resource management to local communities
Ford Foundation	NY	World Wide Fund for Nature-Indonesia	Jakarta	2004	\$200,000	To build organizational capacity to promote sustainable natural resource management, sustainable livelihoods and community rights for natural resource-dependent people
Ford Foundation	NY	Center for International Forestry Research	Bogor	2003	\$55,000	For international advocacy on forest law enforcement on behalf of poor forest-dependent communities
Ford Foundation	NY	Institute for Policy and Community Development Studies	Jakarta	2004	\$140,000	To monitor and report on government delivery of public services, create clearinghouse on

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						public service issues and conduct research and dialogues on building links between civil and political societies
Ford Foundation	NY	Agency of Regional Development Planning, Regency of Nunukan		2004	\$75,000	For action research, planning and dissemination of information on community-based natural resource management in Nunukan, East Kalimantan
Ford Foundation	NY	BirdLife Indonesia	Bogor	2004	\$100,000	To promote community rights and community-based conservation strategies in Eastern Indonesia
Ford Foundation	NY	Perkumpulan Pancur Kasih	Pontianak	2003	\$250,000	For participatory mapping of community lands to help customary communities secure resource rights and develop natural resources management plans
Ford Foundation	NY	Combine Resource Institution	Yogyakarta	2003	\$77,000	To coordinate community-based information network for development planning and provide technical assistance to civil society organizations and local governments in community radio
Ford Foundation	NY	Yayasan Konphalindo	Jakarta	2003	\$310,000	For general support for research, training and documentation on sustainable environmental development issues and to expand its information outreach activities
Ford Foundation	NY	Yayasan KEHATI	Jakarta	2003	\$130,000	To strengthen and expand philanthropy for social change and development in Indonesia
Ford Foundation	NY	Andalas University	Padang	2003	\$180,000	For professional enhancement and curriculum development to strengthen new Master's degree program in integrated natural resources management and development
Ford Foundation	NY	University of Mulawarman	Samarinda	2003	\$120,000	For technical assistance to local governments in East Kalimantan with respect to transfer of stewardship of natural resources to local communities
Ford Foundation	NY	Yayasan Bina Masyarakat Mandiri	Jakarta	2003	\$79,000	For general support for training, demonstration projects and research to strengthen people's participation in rural village institutions
Ford Foundation	NY	International NGO Forum on Indonesian Development	Jakarta	2003	\$150,000	To monitor international financial institutions in Indonesia and for research, training and advocacy on debt issues
Ford Foundation	NY	Jari Indonesia	Jakarta	2003	\$175,000	To develop accountability and performance standards for network of nongovernmental organizations monitoring state-initiated development projects
Ford Foundation	NY	Yayasan Indonesia Business Links	Jakarta	2003	\$170,000	To promote corporate social responsibility in natural resource-based industries and raise awareness and practice of good

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						corporate governance throughout business sector in Indonesia
Ford Foundation	NY	People, Resources and Conservation Foundation		2003	\$89,000	To train Dayak women in traditional weaving techniques and to develop managerial capacity for weaving cooperative
Ford Foundation	NY	National Commission on Violence Against Women	Jakarta	2003	\$200,000	For organizational capacity building and to develop internship and volunteer program for work on women's rights and social justice
Ford Foundation	NY	Indonesia, Government of the Republic of	Jakarta	2012	\$449,499	For Coordinating Ministry of People's Welfare to collaborate with Strategic Alliance for Poverty Reduction (SAPA), partner NGOs and local governments to replicate SAPA Program in 15 more districts
Ford Foundation	NY	Riak Bumi Foundation	Pontianak	2012	\$179,651	For Forest Honey Network to expand membership, help members develop new products and new markets, pilot a low-cost alternative certification system and help protect essential natural bee habitats
Ford Foundation	NY	Wahana Bumi Hijau Foundation	Palembang	2012	\$200,000	To help resolve forest tenure conflicts through alternative dispute resolution and government-approved community-based forest management programs
Ford Foundation	NY	Syarif Hidayatullah State Islamic University Jakarta	Jakarta	2012	\$114,346	For University's Social Trust Fund to help Islamic financial cooperatives in four provinces scale up the Bungkesmas Savings and Health Insurance Program
Ford Foundation	NY	Training and Facilitation for Natural Resources Management	Mataram	2012	\$150,000	To help government planning departments in West Nusa Tenggara build the capacity of village-owned financial institutions in order to expand access to microfinance services and improve rural livelihoods
Ford Foundation	NY	Umar Kayam Foundation	Depok	2012	\$179,053	To Produce a series of popular radio programs to educate grassroots women about the importance of gender-sensitive planning and budgeting at the village and district level and empower them to participate
Ford Foundation	NY	Kampung Empowerment and Development Advocacy Workshop	Kupang	2012	\$152,139	To replicate its program to empower and build the capacity of marginalized women to participate in local planning policy making and budgeting among women farm laborers in the Kupang District
Ford Foundation	NY	Resistance and Alternatives to Globalization	Jakarta	2012	\$179,066	To strengthen community-based social and economic relations and facilitate the participation of poor groups in bottom-up planning mechanisms in six villages in West Java's Garut and Tasikmalaya Districts

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
Ford Foundation	NY	Indonesia Partnership Committee for Poverty Alleviation	Jakarta	2010	\$389,616	To develop resource center for strategic alliance for poverty reduction, integrating many existing poverty reduction data sets and provide technical assistance to local governments and NGOs
Ford Foundation	NY	Womens Development Center	Banda Aceh	2010	\$243,286	To build capacity of grassroots women's groups in Banda Aceh to participate in bottom-up development planning process for women to promote gender sensitive policies and budget allocations
Ford Foundation	NY	Yakkum Rehabilitation Center	Yogyakarta	2011	\$200,000	To pilot community-based rehabilitation and economic empowerment program for differently abled people in Jogjakarta Special Province
Ford Foundation	NY	Scale Up Indonesia	Jakarta	2011	\$250,000	To strengthen community-based mediation as tool for resolving natural resource conflicts and ensuring that rights of local communities are respected
Ford Foundation	NY	Asuransi Allianz Life Indonesia	Jakarta	2010	\$118,872	To pilot and evaluate commercially viable combined savings, life and health insurance product for low-income households in Eastern Indonesia
Ford Foundation	NY	Institute for Policy and Community Development Studies	Jakarta	2010	\$134,239	To assess policy and institutional set up and changes required for nationwide replication of best practices of participation of poor and marginalized groups in public decision making
Ford Foundation	NY	Yayasan Satu Dunia		2010	\$125,688	To develop interactive website as platform for database, information exchanges and impact monitoring for strategic alliance for poverty alleviation program in fifteen districts and cities in Indonesia
Ford Foundation	NY	Indonesian Forum for Budget Transparency	Jakarta	2011	\$397,872	To develop Budget Resource Centers to improve and replicate best practice of sub-district budget quota and integration of poverty reduction program planning in seven districts/cities
Ford Foundation	NY	Santiri Foundation	Mataram	2011	\$200,000	For pilot projects, capacity building and learning activities to help local communities in Nusa Tenggara gain tenure over and participate in managing natural resources and improve livelihoods
Ford Foundation	NY	Indonesian Centre for Environmental Law	Jakarta	2011	\$200,000	To collaborate with Information Commission in assisting public institutions responsible for spatial planning, the environment and land use to develop system of public information provision
Ford Foundation	NY	Specialty Coffee Association of Indonesia	Jakarta	2011	\$138,713	For network of extension agents to help smallholder arabica coffee farmers improve quality and

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						productivity and to underwrite producer group participation in the Indonesia specialty coffee auction
Ford Foundation	NY	Institute for Community Legal Resources Empowerment	Pontianak	2011	\$100,000	For research, dialogue, advocacy and litigation to help indigenous communities in West Kalimantan gain recognition of their rights with respect to land tenure, land use planning and natural resources
Ford Foundation	NY	Association for Community Empowerment	Jakarta	2011	\$580,000	To train women and marginalized groups in gender mainstreaming, pro-poor and gender-sensitive budgeting and bottom-up planning in 15 Strategic Alliance for Poverty Reduction (SAPA) Best Practice Communities
Ford Foundation	NY	Institute of Development and Economic Analysis	Yogyakarta	2011	\$200,000	To promoted participation and coordination of poverty reduction programs and development of transparent and integrated information system that is accessible by poor and marginalized groups
Ford Foundation	NY	International NGO Forum on Indonesian Development	Jakarta	2013	\$150,000	To promote the mainstreaming of post 2015 agenda into national development plan and facilitate Indonesian civil society organizations to monitor the implementation of the programs
Ford Foundation	NY	Women's Development Center	Banda Aceh	2013	\$204,714	To build capacity of grassroots women's groups in Banda Aceh to participate in local development planning and budgeting and access resources from national and local poverty reduction programs
Ford Foundation	NY	Association for Women in Small Business	Jakarta	2013	\$264,444	To promote gender responsive economic policies at the national and local level to improve the welfare of poor women in four areas in Indonesia
Ford Foundation	NY	Yayasan Jerami	Surakarta	2012	\$187,143	To facilitate the development of participatory local poverty reduction strategies and institutions and the construction of community-based poverty data at the neighborhood and city level in Surakarta (also called Solo or Sala)
Ford Foundation	NY	Syarif Hidayatullah State Islamic University Jakarta	Jakarta	2010	\$154,436	For Islamic Credit Co-operatives in South Sulawesi to pilot a health savings product linked to Islamic philanthropic resources
Ford Foundation	NY	Bank Nagari	Padang	2010	\$160,630	For microfinance activities targeting low-income people in earthquake-affected regions of West Sumatra, including new products and services, market research, and a study on the feasibility of e-banking
Ford Foundation	NY	Scale Up Indonesia	Jakarta	2013	\$500,000	To expand and strengthen community-based alternative dispute resolution as a tool for resolving natural resource conflicts

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						and to develop a natural resource conflict monitoring system
Ford Foundation	NY	Yayasan Transparansi Sumber Daya Ekstraktif	Jakarta	2013	\$399,306	To promote transparency and the use of shared revenues from extractive industries to support poverty alleviation programs in selected districts in Indonesia
Ford Foundation	NY	Institute for Community Legal Resources Empowerment	Pontianak	2013	\$200,000	To strengthen legal processes and local advocacy for community maps in West Kalimantan to be included in government land use plans
Ford Foundation	NY	Perhimpunan Penggerak Advokasi Kerakyatan untuk Keadilan Sosial	Bandung	2012	\$214,064	To build capacity of marginalized peoples to influence and monitor implementation of the master plan for the acceleration and expansion of Indonesian economic growth
The Global Fund for Women	CA	Pusat Pemberdayaan Perempuan	Banda Aceh	2006	\$15,000	For general support

Source: Foundation Directory Online, Regional Foundation Library (2014).

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Appendix 7. Indonesia In-Country Meeting Notes

500 Startups: Kaspar Zhou, Investment Manager

This interview provided an understanding of the Indonesian venture capital environment. Topics discussed included types of funded businesses, primary challenges to Indonesian entrepreneurs, and potential introductions to other organizations assisting engineering businesses.

500 Startups, based out of Mountain View, California, and one of the most active investors in the world, is open to various types of businesses. In 2014, they had 350 deals, with 40 in Southeast Asia and at least six in Indonesia. These portfolio companies range from deep enterprise to socially focused. 500 Startups will invest in early-stage companies based on the quality of its founders. Their portfolio focuses on providing goods and services, such as cloud storage and other IoT services. There are few formal relationships. Mr. Zhou has left 500 Startups and is now working with a portfolio company in Bangkok.

There is less of a hardware sector and more of a software focus in Indonesia, although there are some exceptions in agriculture. Many of the interesting hardware startups are in Singapore as there are government grants and university support. From Mr. Zhou's perspective the Indonesian government does not help commercialize technologies, although the Minister of IT has pledged to help. Most funding comes from private companies and investors. There are two main universities assisting entrepreneurship: Bandung Institute of Technology (ITB) and Binus University.

Next steps with Mr. Zhou:

We did not meet directly with 500 Startups, so it's hard to say how they can participate in the project. Keeping in touch with the organization would be helpful for capital access for entrepreneurs. It would be helpful to meet with 500 Startups in Indonesia.

American Chamber of Commerce to Indonesia (ACC/Indonesia): Lin Neumann

Ms. Neumann identified potential private-sector business cooperation opportunities between U.S. and Indonesian companies.

American Chamber of Commerce to Indonesia/ Green Works Asia: Agnes Safford

Mr. Safford directs a sustainable consultancy firm that works with entrepreneurs. He is well connected and offered to explain more of their work and made introductions with other organizations with whom they work.

Bandung Creative City Forum (BCCF): Muhammad Ajie Santika

Mr. Santika is a recipient of support from NI. This meeting discussed cost-sharing of activities.

Mr. Santika explained his affiliation with BCCF and his involvement with other organizations such as Co&Co co-working space, his founding of a digital game company, and his new coffee shop, Siete. He is involved with Jakarta, not Bandung's Digital Valley. BCCF serves as a forum

and plans events to better connect and establish a network for the creative community in Bandung.

Mr. Santika gave us an overview of Bandung's entrepreneurial ecosystem and talked about who is doing entrepreneurial development well in Bandung, like Co&Co and Kolaborasi, Telkom is supporting technological development, but most of this business has to do with furthering their microchip business.

Mr. Santika, a graduate of the ITB's business school, indicated that few leaving the program are opening their own businesses. Entrepreneurs are focused in digital and creative industries. Culinary businesses and game creation are also growing markets.

There is a lesser focus on science and technology businesses in Indonesia, but this could change if talented engineers have incentives not to leave to work in other countries. There are few Indonesian success stories of hardware entrepreneurs. Potential areas for hardware businesses are in the agricultural sector, as there is a large produce sector, tea and rice are major industries, and Palembang has a growing dairy industry.

Other Indonesian locations worth noting are Surabaya and Bali. While we had noted Surabaya previously, Mr. Santika brought it up again because of the shipping and production sectors located there. Bali has an increasingly vibrant startup community. HUBUD is an incubator there with international founders and there are at least four other co-working spaces.

An Indonesian government program exists for entrepreneurship under BEKRAF, however Indonesia's government lacks data and statistics on entrepreneurship. The Bandung city government may be more reliable to support entrepreneurial initiatives than the national government.

Two of the biggest digital projects in Bandung are its Technopolis, supported by the city of Bandung, and it's Bandung Creative Hub, which the city also supports. A potential hardware project is Dycode, an early stage hardware company, whose founders formerly worked in software development.

Next steps with Mr. Santika:

There is a need for businesses to better understand exit strategies. There are few organizations helping with business development, however Telkom, through its Bandung Digital Valley organization, is seeking to support technology businesses. Unfortunately, some entrepreneurs in the area resent this organization.

Follow-up questions for NI:

How does NI work with the Internet of Things (IoT)? Are there some examples?

How does NI support entrepreneurs that are not associated with universities?

Bandung Digital Valley Project: Indra Purnama

Ms. Purnama is a promising fit for partnership with both NI and IC². This meeting discussed value propositions for technology transfer and innovation commercialization.

Bandung Digital Valley (BDV) is a corporate incubator for Telkom, which is the largest telecommunications service provider in Indonesia. To create new products and services, Telkom uses both internal and external sources, with BDV serving the latter. Any research done in the BDV office is relevant to Telkom. Telkom is affiliated with another incubator called the Bandung Techno Park, which is open to anyone, though it does require that 20 percent of the products be used for Telkom product development. There are individuals working on physical, industrial, and electrical engineering at the Techno Park location. Ms. Purnama also mentioned university incubators, which are poorly managed in her opinion, and the Bandung Mayor's "technopolis" plan.

In 2013 BDV started an incubation program selecting 20 entrepreneurs to receive training for seven months in customer, marketing, and business validation, as well as \$20,000 in start-up funds. Most of these startups focus on digital technology; none work with hardware. Telkom has new interest in the Internet of Things (IoTs), and this appears to be a trending interest with many of the groups with whom we met.

For the most part, the BDV office does not have many partnerships, as they are entirely supported by Telkom. They use local universities as talent pools and they perceive the government as cumbersome. The Ministry of Industry does supply equipment to the Bandung Techno Park, but this supply is limited.

Next steps with Ms. Purnama:

Areas for collaboration with BDV are limited, but the affiliated Bandung Techno Park could be a potential candidate. They are looking for both equipment that could be provided by NI and capacity training that could be provided by IC². The Ministry of Industry is closely connected with the project, which may be an entry into the incubator.

City of Bandung: Iman Halwatul, Program Manager

A discussion about development with a small business owner revealed an opportunity to bridge academic research with hardware and software to address commercialization and management challenges. The purpose of this meeting was to discuss a possible memorandum of understanding (MOU) with NI/UT to explore a partnership working towards a laboratory for multidisciplinary projects.

Mr. Halwatul explained the Smart City Initiative, creative industry entrepreneurship, and Bandung's Technopolis plan. We met with representatives from six different areas of the Mayor's office and made a presentation on this project.

The Smart City Initiative brings technology solutions to address the city's complex problems, such as wastewater management, emergency preparedness, traffic, electricity, and water. They have developed an Intelligent Operations Center (IOC) to inform decisionmakers using collected data. The three objectives of the IOC are observing, controlling, and connecting. IBM is a major partner in this project. For the waste management portion, they've recently signed an MOU with Green Resource from Australia to handle garbage and to build a processing plant. The city continued to cite solid waste management as a primary challenge.

The city is helping small to medium businesses (SMEs) bypass the long legalization process and provides zero-percent interest loans through the new Kredit Melati program. This provides needed access to financing for entrepreneurs that traditionally dealt with loan sharks. They hope to encourage 100,000 entrepreneurs in the next five years, but do not seem to have a plan to implement this vision. The plan for Economic Development is through building a cluster economy by focusing on 30 different industries, mostly in creative economies. Most of these industries still produce handmade products as opposed to manufacturing operations. The plan is to scale these industries, which will mean more hardware and technological capital will be needed.

The Mayor has an ambitious plan to build a Technopolis outside of Bandung in the city of Gedebage; it will serve as a creative city and technology base. While they do not plan to build a university there, current universities will have research centers inside the incubator in Gedebage. Facilities will include areas for ITB, UNPAR, agriculture, and manufacturing. Other initiatives include a science park, a creative business center, high-tech industries, an idea incubator, a bio-tech laboratory, and high-speed rail from Jakarta to Bandung. The city hopes to attract existing industries and plans developed by AECOM. The Mayor is still in the fundraising phase of this project and is looking for partnerships in order to form a triple helix model. The high-speed rail portion of the project comes from the national government. Summarecon, an Indonesian company, is constructing the project.

Next steps with Mr. Halwatul:

Bandung is active in local projects and has the vision, autonomy, and access to financing to carry out projects at the regional level. Forming a relationship with the city directly would be promising for mutual development. Project managers should not only maintain this relationship (via Mr. Halwatul), but should also include the ITB LPIK incubator (an individual named Juanda has been cited by many sources as the best person to contact regarding this inclusion). The technopolis is a bold project and has significant challenges. This is a long-term project, but the mayor will be leaving office in three years and his successor may or may not share his vision. Bandung's smart city initiative and infrastructure plans could be a potential space for National Instruments products.

eFishery: Gibran Chuzaefah Amsi El Farizy, Founder and CEO

A conversation revealed that while many economic development challenges exist, business opportunities could be improved by enhancing infrastructure and controls.

Mr. Chuzaefah is one of the most recognized hardware entrepreneurs in Indonesia with his eFishery business. He has been the "Entrepreneur of the Year" in Indonesia, is an ITB alum, and is a partner within Global Shapers. Mr. Chuzaefah's business measures fish activity in an effort to optimize fish farm yields. NI technologies may be able to assist their production line and demonstrate how hardware entrepreneurship could assist Indonesia in general.

Mr. Chuzaefah expanded on his first interview to describe more about his project, eFishery which is the Internet of Things (IoT) for fish and shrimp farming. EFishery has created a device that has two sensors that release fish food based on fish agitation (movement and sound),

indicating hunger or if a population is sated. The device is controlled by mobile and desktop technologies. EFishery sold 150 units last year in the Indonesian market. Approximately 70-80 percent of the Indonesian industry uses timer-based equipment sold by his competition. EFishery has difficulty finding quality manufacturers; eFishery's product parts are made in China and are then assembled in Indonesia. Mr. Chuzaefah is considering expanding to Thailand, China, Vietnam, and Brazil. Other areas where eFishery has considered expanding includes agricultural focused robots for releasing fertilizer, water quality sensors, and applications in the poultry industry.

EFishery collaborates with Telkom via their M2M Solution, and Bank Mandiri financed eFishery's founding grant through their cooperate social responsibility (CSR) initiative.

As for other hardware-based businesses, most of them can be found in Jakarta and Surabaya; many focus on queuing systems. Hardware entrepreneurs find the most difficulty in commercialization. Commercialization offices, such as those found at LPIK, exist but do not work effectively. There are prototyping labs available that focus on electrical engineering, but not mechanical. Hackathons attract some hardware entrepreneurs, which could be a good resource. The IoT community might be a good connection for hardware entrepreneurs; the community has about 150 members who are mostly entrepreneurs.

Mr. Chuzaefah noted that the local and national governments are supportive in encouraging SME growth through financing and other initiatives that include:

- SME financing;
- Bandung Technopolis;
- Ministry of Cooperatives/SME National Entrepreneurship Program (GKN);
- Ministry of Research and Technology fund research in universities and prototyping;
- Ministry of Technology: Business Innovation Center (BIC) attempts to branch the divide between product and market; and
- Ministry of Tourism: Bureau of Creative Economy supports crafts, film, and mobile apps.

There are various ways to receive entrepreneurial funding, including:

- Kredit Melati is at the city level and provides zero percent interest loans (open to individuals as well as companies);
- Angel Investor Network (ANGIN) with GEPI;
- Korporasi (meaning cooperative) legal entities—one must be a member of the cooperative for access to financing and “kredit korporasi”; and
- IdeaSpace: A Phillipino venture capital firm that is international.

Several types of competitions are available:

- Bank Mandiri: The best funded competition with prizes up to 1.5 billion Rupiah;
- Cigarette Company: Prizes up to 500 million Rupiah;
- Shell Corporation: Prizes up to 25 million Rupiah;
- Ministry of Education: Funding at university level of 12 million Rupiah;

- Others: Startup Asia, Echelon, Swiss Stars;
- There are no hardware focused competitions, but there are robotics competitions among high schools. There also are hackathons for hardware entrepreneurs.

Next steps with Mr. Chuzaefah:

Mr. Chuzaefah is an active entrepreneur and a “poster boy” for tech entrepreneurship in Indonesia. With plans to scale up, his company could be a fitting candidate for NI products. He also gave us multiple connections in other organizations and is willing to be a gate-opener for them.

Endeavor Indonesia: Reza Caropeboka, Communications and Outreach Manager, and Inez Stefanie, Entrepreneurs Search and Growth

The meeting with the leadership of Endeavor Indonesia sought to discuss systemic cooperation across sectors to enhance entrepreneurial training. Positive relations were established with the NI/UT team.

The organization, with seven people in the office, seeks to strengthen entrepreneurial ecosystems by providing inspiration, mentorship, and investment to high-impact entrepreneurs in emerging markets. They are working with Mr. Chuzaefah from eFishery. They provide mentorship opportunities but usually conduct trainings. Their philosophy is to pick entrepreneurs instead of companies and use mentors instead of organizations. Endeavor usually works with mature businesses. Currently they work with 17 entrepreneurs and 15 businesses. One interesting organization they are working with is Tirta Marta, located in Jakarta, which helps produce plastic materials from cassava.

They reported a common challenge for Indonesian entrepreneurs is to penetrate their home market. If they are looking to expand, they first consider Southeast Asia before Europe and before U.S. markets. Most businesses are in consumables, such as food and retail. Other challenges are the need for training in business management and lack of vibrancy in the network. However, they noted the growing momentum in entrepreneurial development in Indonesia.

Next steps with Endeavor:

Endeavor is often consulted on helping to plan and arrange conferences and panels on entrepreneurship. They host a scale-up clinic conducted by their mentors; they are always looking for mentors. The sponsors that they work with for the conferences are most often from banks. Many of the organizations that they work with are those we have met with.

Endeavor may not be the best organization for a partnership but they could be helpful for introductions within the network and speaking opportunities.

We sent them information about SXSW and the IC² programs. Additionally, we suggested contacting IC² to discuss conducting speaking engagements and training seminars.

Global Entrepreneurship Monitor Indonesia (GEM): Catharina Badra Nawangpalupi, Director

This was a discussion with a representative of a prominent international non-governmental organization about funding options for technology innovation.

GEM is a leading and reputable source for research on global entrepreneurship. This conversation explored challenges that entrepreneurs in Indonesia face and a potential role for the Catholic University in Bandung.

Global Entrepreneurship Program Indonesia (GEPI): Angelyn Ardiwinata, Executive Director, and Nadia Nilam, Program Officer

This visit and interview discussed the start-up community, digital collaboration laboratory, and networks of partner start-up organizations.

GEPI was started by funds from the U.S. during the Obama administration to support entrepreneurship. They discussed current partnerships and the possibility for future cooperation.

The Global Entrepreneurship Program Indonesia (GEPI) is in its beginning phases of development. In 2013 they developed their first incubator, which is currently in its “preview phase.” Essentially, they operate a co-working space with a fee for usage and an incubation program focusing on early-stage startups. The incubator mostly contains digital technology startups, as this is the current main demand in Jakarta. Individuals selected for the incubation program undergo six months of intensive training, including mentorship from other experienced startup owners through a self-tailored curriculum.

The incubator does not contain any hardware startups and there are no current plans to actively pursue hardware entrepreneurs. However, they are open to assisting hardware startups. They stated that if a facility were built to allow hardware research and development, there would definitely be interest in the community. They cited a hardware incubator in south Jakarta but did not provide the name.

GEPI is currently “community-building” and holds around 20 trainings and one large summit per year. Trainings take the form of app developer trainings, hackathons, networking events, and other digital-based events. The summit will be held this year on November 4-6, 2015; location details have not yet been announced. They also assisted with the GIST program in Indonesia last year.

GEPI partners with U.S. State Department programs, Ciputra and the Coursera Program via the U.S. Embassy, AmCham, Goldman Sachs, and the Indonesia Ministry of Industry. Universities serve as talent and intern pools (including the University of Michigan) through formal relationships.

Ms. Ardiwinata suggested looking into opportunities in agriculture and natural resources for hardware entrepreneurship opportunities. She noted that a GEPI board member and property developer has a vision to include an incubator in each new suburb that their company develops, but could not provide the name.

Next steps with GEPI:

GEPI is interested in having IC² attend the summit in November. We have also sent them additional information on the Converting Technology to Wealth workshop and SXSX. They are interested in having interns from the LBJ School.

Institute of Business and Economics Kerakyatan: Adi Laksono and Pradygdha Jati

IBEKA is an NGO established in 1992 that provides electricity to the rural poor of Indonesia. In their mission they emphasize analyzing a cross-section of social, environmental, and economic impacts to achieve community strengthening and commercial activity. Participating communities are electrified through a series of micro-hydroelectric systems, which are preferred because of their low capital and maintenance costs. Before selecting a community, IBEKA undertakes substantial due diligence to ensure that the community is a good fit. It then requires community members to undergo a series of trainings so that they can manage the system efficiently and effectively.

IBEKA noted that one of the main challenges they had was in capacity building. Ideally, an individual could walk away from trainings with not only technical skill, but also the ability to innovate and apply those skills to other endeavors. IBEKA envisions groups of entrepreneurs forming in these villages who can then create new businesses and industry for their communities. By having an incubation space, IBEKA could help further encourage and train these village entrepreneurs.

IBEKA is well connected to government organizations, particularly the Ministry of Cooperatives and SMEs. The university relationships they have are informal and mostly serve as an intern pool. Most of their funding comes from donors, including an India-based charity, Ashden, that focuses on sustainability projects.

Next steps with IBEKA:

IBEKA would like to have more information from NI about the Malaysia and South Asia incubators, particularly costs, funding, and technology composition of the labs. They are very interested in forming a partnership with NI to make an incubator and can help connect to government agencies and donors.

Kibar: Yansen Kamto, Chief Executive

This businessman discussed his impressions about a detached but cooperative government-industry relationship that creates a desirable ecosystem for foreign businesses and investment.

Mr. Kamto has been the Google representative for Indonesia for seven years. He reconfirmed that we are meeting with the right individuals. If we want to pursue the City of Bandung, he said an individual named Juanda is the person to be in contact with. We had heard this from multiple sources, but we had learned Juanda was traveling in the U.S. during our time in Indonesia.

Kabar seeks to empower youth to use technology to eliminate the digital divide. Mr. Kamto has been associated with MIT's Global Startup Lab. The goal of his organization is to shift mentality, hold meetings, workshops, and host events. He teaches an Audacity/Android/Google

class. He has a joint incubator with Gadjah Mada University (UGM), which is the biggest university in the country. This is based on the StartX model of Stanford University. In this program, each group has three months of access to mentors and a free co-working space. Mentors are selected from businesses identified during a Startup Weekend.

Mr. Kamto also has an incubator in Surabaya in collaboration with the Mayor. He says the Mayor is a visionary, and skilled at operationalizing implementation. As Indonesia's second-largest city, Surabaya is home to 30 universities. Mr. Kamto also broadcasts a radio show about entrepreneurship in Surabaya. Potentially, Surabaya could be an arena for collaboration.

Mr. Kamto runs the Startup Weekend Indonesia and Innovators Move programs. As an international program, he thinks there could be potential in expanding this program to focus on hardware businesses. He also operates the Innovators Move competition in partnership with ITB to focus on agricultural and hardware applications, which could be an area of collaboration. This competition tends to have around 120 participants and includes a week-long technology boot camp. This competition provides a pipeline for the best students to enter into the program.

Mr. Kamto believes ITB is Indonesia's best technical university, even though it is more bureaucratic. He suggests approaching the faculty of the informatics and electrical engineering programs. LPIK is the incubator at ITB but we've heard from multiple sources that it does not currently function well.

Gadjah Mada University (UGM) is Indonesia's largest and most influential university. President Joko Widodo is an UGM alum. MIT and UGM have a collaborative electrical engineering program, and this is the best program of its type in the Indonesia. Google helps to fund the university, and Google approvals go through Yansen.

Insitut Teknologi (ITS.AC.ID) is the most prominent university in Surabaya and the most prominent school behind ITB. Google also provides funding to this university.

Mr. Kamto did not seem hopeful about science and technology parks or the national government's initiatives.

Next steps with Mr. Kamto:

Given initial connections and talent pool, he recommended focusing on ITB, but the other universities could be additional options if ITB does not work out. For collaboration, he suggested working with universities as opposed to ministries and local governments because universities are better equipped to negotiate with the government.

Surabaya should be visited, and Mr. Kamto is willing to help to make introductions. It could be beneficial to broadcast information about the Indonesia Partnership through his radio show.

Mr. Kamto would like to know how to get involved with SXSW. He is interested in the CTW, Malaysia and Vietnam cases.

Kolaborasi Kapital Indonesia: Adryan Hafizh, Co-Founder and CEO

Kolaborasi Kapital Indonesia is a suitable potential partner for cooperation on issues of entrepreneurship and wealth creation.

Mr. Hafizh works with Kolaborasi, a business incubator, which is involved with stimulating the entrepreneurial ecosystem in Bandung. He also coordinates the Startup Bandung competition, a globally branded business model competition occurring at the university level. As a potential Indonesian partner, he can bring his incubator experience and understanding about past Indonesian entrepreneurial collaborations and competitions.

Kolaborasi is a community holding company and incubator that focuses first on “people development” and next on connecting individuals and startups to business development. They have three spaces in Bandung and one in Jakarta and have been active for a year and a half.

When selecting startups, Kolaborasi emphasizes the value of the people behind the startup and considers whether or not the innovator is a resilient individual who can move past failure and is not overly risk-averse. The group implements three phases of incubation: the first three months are spent evaluating and training the individual, the following six months are spent fine tuning the prototype, and the final three months are spent on business and pitch development. They typically take on at least six startups in each “batch” and are currently on their second batch with a total of 11 startups. They focus on three sectors: civic hack or social impact business, renewable energy, and IoT and hardware, however they do not yet have startups in renewable energy or IoT and hardware.

Kolaborasi funding comes from international corporations from France, Singapore, and Japan to Indonesian corporations looking for new revenue streams with little emphasis on social impact. The government is not involved. Seed funding has been from Excel Ventures, Bank Mandiri, and Spark DBS Bank.

Mr. Hafizh emphasized that the main barrier to entrepreneurial development in Indonesia is the cultural mindset. Indonesians tend to be risk-averse and prefer conventional business to entrepreneurship. There are some infrastructure and funding issues, but these are decreasing. For example, Internet and free Wi-Fi access have recently increased and become more affordable. The availability of these services are fundamental to the initial trend of startup culture. Mr. Hafizh and his colleagues wonder whether or not Indonesian culture is ready for a spike in entrepreneurial activity.

Next steps with Mr. Hafizh:

Most of the entrepreneurs in Kolaborasi focus on digital technology and might not be good candidates for LabView. They are hoping to include more hardware and IoT entrepreneurs in the future, so this could still be a productive relationship. Kolaborasi often hosts training, mentorship, and other capacity building events, which could be a promising space for NI and IC².

Ministry of Industry, Republic of Indonesia: Haris Munandar N, Ph.D., Director General, and Merri Pintaria

This meeting identified potential possibilities for partnerships, outside stakeholder involvement, sharing knowledge, cooperative and academic partnerships, and hosting external workshops.

Dr. Munandar and his staff spoke about the Ministry of Industry, their current programs, and about potential collaboration to support their work.

The Ministry of Industry has 23 research centers, with the largest in Bandung. They concentrate on textiles, pulp paper, and oil research. Sumatra's centers concentrate on manufacturing, petrochemicals, steel, and minerals. The center in South Sumatra focuses on rubber. The Ministry believes that they need more help in capacity-building within these centers. Currently each center should have capacity-building technologies to help in prototyping, but from the conversation, the Ministry's role provides the facility for the research but does not provide training.

Dr. Munandar mentioned that some Polytechnic schools have commercialization training, and companies send their staff to these training centers. Currently, training for global businesses happens in the Ministry of Trade and not the Ministry of Industry, and capacity-building often falls under the Ministry of Education. The Ministry of Industry is involved in Bandung Technopark and is helping to support programs related to electronics, information technology, farming and agriculture, and transportation. There is a plan to create a science, technology, and automotive park in Bandung. Potential sponsors are Toyota and other auto manufacturing companies.

Although the MP3EI aims to set up 14 industrial parks with each having its own specialty, the national government has changed the name (but not the mission) of the project. It is still in its conception phase.

Dr. Munandar mentioned the new law that requires companies to provide value-added products as opposed to exporting raw materials. The Ministry encourages stimulation of pioneer industries through tax reductions for small businesses. They attract large industry by providing facilities. They have worked in the past with organizations from many different countries, but none from the U.S.

Past partnerships include Indonesian as well as foreign partners. ITB and the University of Indonesia are partners; they receive assistance from organizations such as the United Nations Industrial Development Organization (UNIDO), the Japan International Cooperation Agency (JICA), the Korean International Cooperation Agency (KOICA), as well as organizations from Italy, Spain, and other European countries. They have not had U.S. connections in the past.

Next steps with Dr. Munandar:

Dr. Munandar would like us to visit the research center in Bandung. The Ministry of Industry was excited about the possibility of collaboration. They have additional projects in the near future, which would benefit from help in capacity-building. They provided a number of

brochures to get a better idea of their projects. We presented them with the value proposition, case studies from Planet NI in Malaysia and Vietnam, and information on the CTW course.

Startup Lokal: Aulia Halimatussadiyah (Ollie), Initiator

This discussion with the initiator of Startup Lokal revealed some of the barriers to industry as they try to develop relationships with academia and the government.

Startup Lokal supports entrepreneurs in Jakarta. Ms. Halimatussadiyah can help U.S. participants understand challenges that Indonesian entrepreneurs face, and is knowledgeable about hardware entrepreneurship in Indonesia. She was able to give us an overview of her organization and the entrepreneurial ecosystem it exists in.

Startup Lokal is the largest meetup group in Indonesia for digital entrepreneurs. Since 2010 it has provided support and resources to over 200 entrepreneurs at each session held in the Jakarta Digital Valley. Each session includes a speaker and Telkom is the only sponsor.

Ms. Halimatussadiyah hopes to start something similar to TechShop in San Francisco. One for Indonesians is creating value in hardware businesses.

One additional initiative that Ms. Halimatussadiyah has is the Girls in Tech organization, which hopes to promote STEM education for young women. She hopes that her organization will be supported by Twitter when they open an Indonesian office.

Next steps with Ms. Halimatussadiyah:

She suggested that we look into universities in the Depok area, outside of Jakarta. Even though Startup Lokal is focused on digital startups, we did not find a direct connection about how we can further this organization's goals or how they can assist in ours. However, the founder is well-connected and may be able to assist in introductions, especially in the Depok area.

Technology Institute Bandung (ITB): Donald Crestofel Lantu, Professor at the School of Business and Management and Director of the Center for Innovation, Entrepreneurship, and Leadership

This introductory meeting indicated that ITB is looking for opportunities to enhance student opportunities in applying technology to solve problems.

Mr. Lantu is a Professor at the School of Business and Management and Director of the Center for Innovation, Entrepreneurship and Leadership at the Technology Institute Bandung (CIEL SBM ITB). He provided information as to what the university is trying to accomplish for entrepreneurial mentorship and where there may be potential to support their work. He also is knowledgeable about the ITB entrepreneurship development center and entrepreneurial talent at the university.

We met with Mr. Lantu and four of his undergraduate and graduate students. ITB students involved in technology focus on digital and creative industries, such as app creation and animation. They host product showcases at the end of each trimester, and one such showcase

focuses on electrical products. Overall, there are few hardware projects at ITB, but some examples include research on large infrastructure projects, like energy producing sea turbines.

ITB has an incubator but they do not have a commercialization office. They have trainings in commercialization, but it rarely focuses on hardware technologies. We mentioned MP3EI as a potential source of support, but we were told that this plan has been abandoned by the President. However, the City of Bandung is planning to develop a local Technopolis regardless.

Next steps with Mr. Lantu:

For partnerships, they usually tap into local informal “communities” for training, mentorship, and networking. There are over 200 government programs involving grants, tours, and product showcases, but few direct relationships. In fact, the main challenge Donald and his students noted was the abundance of slow, cumbersome bureaucracy. They recommended that government involvement is something to be avoided.

USAID Indonesia: Emmanuella Delva, Ph.D., High Education Advisor, and Thomas J. Cody III, Senior Alliance Builder

Dr. Delva and Mr. Cody clarified the USAID mission in Indonesia, and gave a better idea of how to tailor proposals directly to the mission’s collaboration goals. They shared additional resources such as the GDA concept paper and APS criteria that clarify USAID strategy in the area.

The first meeting was with Dr. Delva, who works in higher education. She coordinated a meeting with the PSE representative, Mr. Cody, to talk about private sector involvement to support their objectives. Dr. Delva mentioned areas for collaboration such as adding a private sector component to the PEER network. She was interested in involving the Indonesia Partnership partners into the Sustainable Higher Education and Research Alliance (SHERA). She will let us know when they are accepting proposals.

Next steps with USAID:

We can request USAID proposals for publically available information. We should make a request for the information in the Kopernik project that is a Development Innovation Ventures (DIV) grantee.

Science should be defined broadly in the proposals, and should include concepts such as democracy, human rights, and good governance, as well as health and the environment.

After sending Mr. Cody and Dr. Delva a summary of the project, and case studies on Malaysia, and information about the Vietnam project, Dr. Delva will send us the Science and Technology newsletter that will include calls for proposals. The mission is flexible with projects that have an Indonesian focus, but must still go through the D.C. office. When submitting the PACE alliance to D.C., they will briefly show it to the Indonesian Mission for feedback; the Mission cannot necessarily vouch for it. Regardless, they were clear that they would like to see a proposal from us.

USAID Indonesia: Kelly Gibbons, SME Contractor

Ms. Gibbons is an aid worker and funded researcher investigating how data can enhance the value chain of management and distribution. The meeting revealed current public-private partnerships.

As a USAID contractor with SMEs in ASEAN, Ms. Gibbons works as a contractor for USAID and understands the types of projects that international aid organizations currently found in Indonesia. Her focus on SMEs was helpful to understanding current projects and how NI/UT activity can support or fill a gap in projects.

Appendix 8. Supportive Information—Kenya

Equipment and Software

NI LabVIEW

LabVIEW is a graphical programming platform that helps engineers scale from design to test and from small to large systems. It offers unprecedented integration with existing legacy software, IP, and hardware while capitalizing on the latest computing technologies. LabVIEW provides tools to solve today's problems—and the capacity for future innovation—faster and more effectively.

NI LabWINDOWS

LabWindows/CVI is a proven ANSI C integrated development environment (IDE) and engineering toolbox. For over 25 years, developers have relied on LabWindows/CVI to create stable, high-performance applications for manufacturing, military, aerospace, telecommunications, and automotive industries.

Measurement Studio

National Instruments' Measurement Studio is an end-to-end system design solution with customizable Windows Presentation Foundation (WPF), Windows, and Web Forms UI controls like graphs, charts and gauges, advanced data analysis functions, and code generating tools for hardware communication.

Innovation Readiness

The IC² Institute's Innovation Readiness Series™ is an eLearning program that offers training for engineers, researchers, scientists and entrepreneurs in the key issues for successful commercialization. Participants in the program learn to:

- Articulate their technology quickly and distinctly to potential investors or partners;
- Identify key technology benefits and their potential commercial value;
- Navigate the development status of the technology;
- Understand IP basics and early strategic IP issues;
- Assess the competition;
- Validate the idea through a using a proven market validation methodology; and
- Engage in early business development on their technology.

Institutional Descriptions

National Instruments

Planet NI, a signature program of the \$1.2 billion National Instruments company, can empower engineers by providing increased access to NI technology, expertise, and mentorship. Specifically, the program offers:

- Technical hardware and platforms for data acquisition, automated testing, embedded control and monitoring, industrial communication buses, instrument control, and educational purposes;
- Software such as NI LabVIEW, NI LabWINDOWS, and Measurement Studios, which synchronize and visualize data from inputs in any format and language;
- Expertise in technology operations and maintenance, as well as in technology startups and business development;
- Mentorship specific to engineers in entrepreneurship; and
- Capacity building for new enterprises.

The IC² Institute

The IC² Institute is an interdisciplinary research unit of The University of Texas at Austin that works to advance the theory and practice of entrepreneurial wealth creation. As a partner of National Instruments in Kenya, IC² offers:

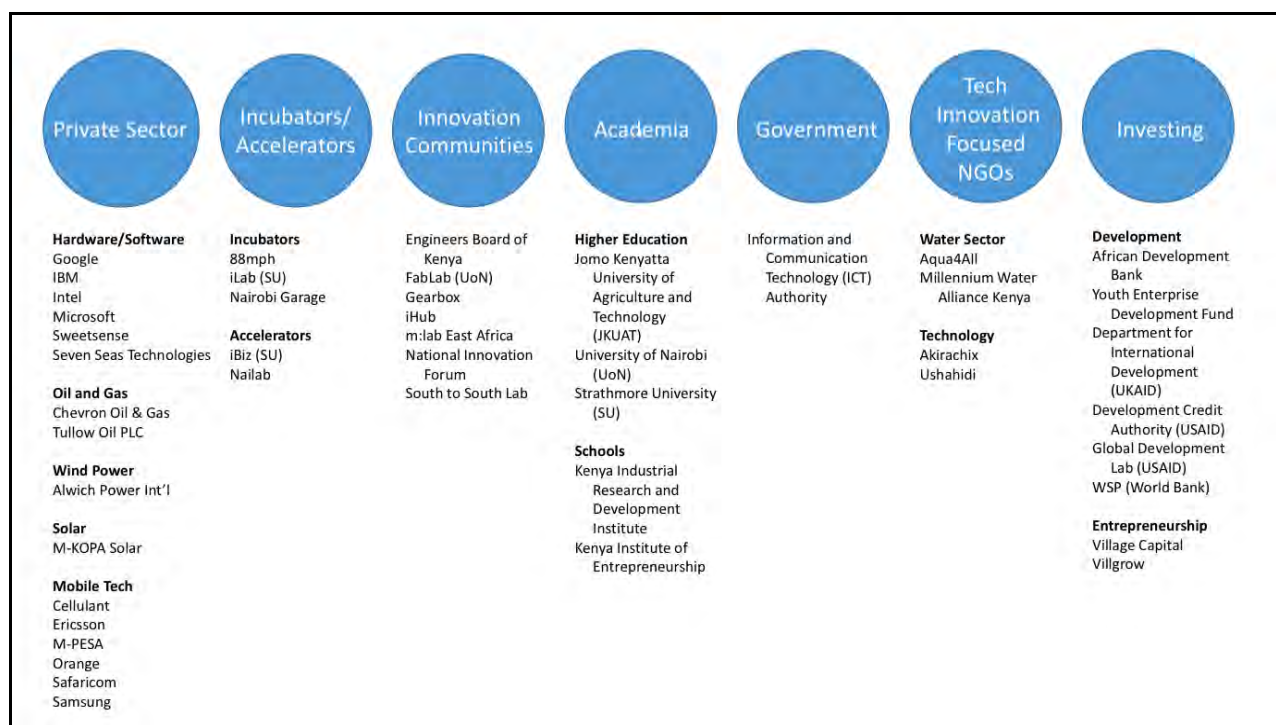
- Counseling and support with respect to business strategy, operational guidance, and infrastructure development;
- Student mentorship and research programs;
- Training in technology commercialization;
- Access to proven, effective curriculum for international business development;
- Applied economic research and data collection;
- Nonpartisan analysis of economic trends;
- Business wisdom from 160 IC² Institute Fellows undertaking groundbreaking research on regional economic development and entrepreneurship worldwide;
- Advanced commercialization training and tools for technology assessment
- An Innovation Readiness curriculum to train entrepreneurs in go-to-market strategy;
- Access to capital through an international network of angel investors and venture capitalists; and
- Worldwide reach, with a presence in over 30 countries to date.

Graduate Consultants at The University of Texas at Austin

Graduate consultants at The University of Texas at Austin can provide management consulting, organizational training, and market research. Specifically, these consultants can provide the following in Kenya:

- Management consulting services related to organizational development, technology innovation and transfer, gap analysis, needs assessments, finance, human resources, development, fundraising, and sustainability;
- Marketing and market research services including market size assessments, consumer market identification, primary research planning and execution, product design, brand planning, and regional and international communications strategy;
- GIS mapping capability, allowing partners to inspect terrain and guide development planning; and
- Organizational training and leader mentorship.

Other Institutions (Listings from Figure 8.1)



Backgrounds and Identities of Key Participants

Jimmy Hwang, Marketing Manager for Emerging Markets, National Instruments

Mr. Hwang is a seasoned business leader with a unique blend of business skills, hands-on technical expertise and international experience. His focus is to provide value and high quality user experience for international customers by formulating and executing go-to-market strategy in fast-paced and rapidly changing environments. For more than 13 years, he has proven his ability to lead both domestic and international teams in R&D, Marketing, and Sales organization delivering measurable business results. He was born and raised in South Korea, and has extensive business experience throughout Asia.

Rudi Ngnepi, Research and Design Group Manager, National Instruments

Rudi Ngnepi, a R&D group manager at National Instruments, was born in Cameroon. He also lived in Kenya for one year and immigrated to the United States in 2000 to attend the University of Oklahoma, where he received both Bachelor and Masters of Sciences in Engineering.

David Gibson, Ph.D., Senior Research Scientist, IC² Institute

Dr. Gibson is Senior Research Scientist at the IC² Institute. His Ph.D. is from Stanford University with an emphasis in organizations, communication, and innovation. During 2000-2001, he was a Fulbright Scholar at Instituto Superior Técnico, Lisbon, Portugal. He is Director of the UT-Austin | Portugal International Collaboratory for Emerging Technologies (CoLab) and the University Technology Enterprise Network (UTEN). Dr. Gibson's research and publications focus on the management of technology/knowledge, cross-cultural communication and management, and the growth and impact of regional technology centers worldwide. His journal and book publications have been translated into Mandarin, Japanese, Korean, Russian, Spanish, Italian, French, German, Finnish, Norwegian, and Portuguese.

David Eaton, Ph.D., Bess Harris Jones Centennial Professor of Natural Resource Policy Studies, The University of Texas at Austin

David Eaton received his Ph.D. in environmental engineering and geography from The Johns Hopkins University. Eaton served on the staff of President Nixon's Council on Environmental Quality and on President Ford's Office of the Science Advisor. Dr. Eaton also worked as a junior staff member on staff at The World Bank and The U.S. Agency for International Development. Professor Eaton teaches courses on systems analysis, environmental and energy policy, and nonprofit management in the LBJ School. He has lectured in 20 countries and conducted field research in 15 nations on topics that include rural water supply, resolution of water resource conflicts, energy management, environmental problems of industries, management of emergency medical services, applications of mathematical programming to resource problems, insurance, and agriculture.

Sector Priorities for Entrepreneurship

As part of the trip to Kenya, the graduate consultants identified six sectors for potential lead development, representing an overlap of interest among potential partners in Kenya and NI. Each of these sectors is of high priority for public and private decision-makers and identified as areas of high growth potential in Kenya.

Water

The water sector, especially quality control, instrumentation, and development of new resources, is a focus of the Kenyan government and local and international donors and NGOs. There is a demand for remote control and quality assurance of water points and channels. There is a need for measurement of aquifer use and replenishment, as well as data collection and sharing on water accessibility and quality. There are several possible avenues for partnership in this sector

such as university labs, incubators, donors, and implementing agencies (as well as private sector players deploying new projects).

- Millennium Water Alliance (select members):
 - Care International (NGO)
 - World Vision (NGO)
 - Water Missions International (NGO)
 - Water.org
 - Aqua for All (NGO)
 - Catholic Relief Services
- Millennium Water Alliance (select funders):
 - Coca Cola Foundation
 - Craigslist Foundation
 - Hilton Foundation
 - P&G
 - Global Environment and Technology Foundation
 - USAID
 - US Department of State
 - UNICEF
- World Bank
- Aquaya
- WSUP Enterprises
- Maji na Ufanisi (Water and Development).

Oil and Gas

The LAPSSET Corridor Project, an international oil pipeline project with over \$32 billion invested (over half of Kenyan GDP), involves the following components: building a port, building an oil pipeline to the port, and oil refinery, as well as building rail, highways, three airports, and fiber optic along the pipeline. This economic corridor project will connect Ethiopia, South Sudan, and Kenya and has a huge potential for positive economic impact on the region. The oil and gas sector in Kenya is expanding bases on recent discovery of natural gas in Northern Kenya as well as on and offshore discoveries of oil. These large infrastructure projects are targets of opportunity for National Instruments technology.

- LAPSSET Chinese Investors;
- African Development Bank;
- Tullow Oil PLC;
- Chevron Oil & Gas; and
- Australian, American and Indian Investors.

Wind Power

Kenya has encouraged investment in renewable sources, such as wind power. For example, there is massive turbine development in very early stage of development on Lake Turkana funded by

international multilateral and bilateral aid agencies and supported by the Kenyan government. The turbines will provide power for a manufacturing industry to be established in Turkana.

- Alwiche Power Int'l;
- African Development Bank;
- Belgium Development Company for Developing Companies; and
- Government of Kenya.

Solar Energy

Although the sun shines most days of the year in Kenya, Kenyans typically rely on backup generators (or primary sources) using oil. The Kenyan government is slated to invest \$1.2 billion in private company partnerships. In these government and private partnerships will see the state sharing half the cost. Solar power represents a large business opportunity. The following organizations are actors and investors in solar energy in Kenya.

- M-KOPA Solar;
- China-Kenya partnership;
- Kenyan Ministry of Energy, Director of Renewable Energy; and
- Kenya Renewable Energy Association.

Mobile Technology

Mobile telecommunications is one of Kenya's largest business sectors, as penetration is deep in Kenya and reaches rural, hard-to-reach communities. Solutions may incorporate the use of mobile phones for remote monitoring, mobile payments, etc. In 2014, 59 percent of Kenya's adult population was using mobile money. M-PESA is the mobile payment solution provider. There exists a diverse set of businesses and opportunities associated with new applications, repair, maintenance, and related services, such as:

- M-PESA;
- Equity Bank;
- Google;
- KCB Bank;
- USADF;
- PIVOT East; and
- Samsung.

Universities and Incubators

Technology departments of universities such as the University of Nairobi and Strathmore University have the potential to work with National Instruments' hardware and software (LabView) platforms as part of their curriculum or training for current and aspiring young entrepreneurs. One potential project with the University of Nairobi is to set up a lab for water testing, monitoring, instrumentation, and analytics as a demonstration and testing unit. Labs include:

- University of Nairobi: FabLab;
- iHub;
- NairobiGarage;
- NaiLab;
- Kenya Industrial Research and Development Institute;
- M:Lab East Africa;
- Kenya Institute of Entrepreneurship; and
- 88mph.

Goals for Kenya Trip 2

Trip Goals and Targets

The goal of this trip include following up on objectives from Trip 1 as well as engaging specific target organizations and funding providers. The partnership will continue to build relationships, seek opportunities for cooperation, and learn about the local entrepreneur, incubation, and water-sector ecosystems. In sum, the partnership will:

- Develop agreements for joint activities between NI, UT, the University of Nairobi and other partners; and
- Engage specific funding providers.

Targets include:

- Millennium Water Alliance Kenya;
- University of Nairobi;
- iHub; and
- Funding Sources.

Expectations, Deliverables, and Priorities

The expectation is that the partnership will engage with government-funded projects as a UT LBJ, NI, and implementation partner in local incubators or universities.

Deliverables include:

1. Agreements with water sector stakeholders, at least one that unifies UT, NI, MWAK, and UoN;
2. Agreements with Gearbox, NI/UT;
3. Agreements upon human resource appointments; and
4. Identification of additional sectors that may be a good fit for NI instruments and innovation.

The priorities for the trip are 1) safety; 2) budget; and 3) deliverables.

Possible Kenya Trip 2 Itinerary, August 6-16, 2015

Date and Activities	Corresponding Objectives
Aug 6 (Thursday): Depart Austin	(travel day)
Aug 7 (Friday): Arrive in Nairobi	(travel day)
Aug 8 (Saturday): Revisit iHub; Informal introductory meeting with UoN and MWAK team	Get acclimated; introduce Alex Leist to UoN team, strategize week ahead and meetings necessary
Aug 9 (Sunday): Prepare materials for weeks' worth of meetings	Information gathering, getting prepared for weekend and week ahead
Aug 10 (Monday): Meeting with UoN	Understand current entrepreneurship activities throughout UoN Departments and labs; tech-transfer presentation; gap analysis; get interview footage
Aug 11 (Tuesday): Meet with MWAK Stakeholders	Establish objectives and identify stakeholder contribution to NI/UT/UoN partnership
Aug 12 (Wednesday): Formal personal introductions of UoN, MWAK, NI, UT contacts	Establish relationships and foster communication among party leads; get formal agreement on objectives and next steps
Aug 13 (Thursday): Meeting with Kamau Gachigi (Gearbox)	Establish needs assessment; get formal agreement on objectives and next steps
Aug 14 (Friday): Courtesy call to His Excellency, Mwai Kibaki, Third President of Kenya	Update and maintain positive relationship with key government influencers and stakeholders
Aug 15 (Saturday): Depart Nairobi	(travel day)
Aug 16 (Sunday): Arrive in Austin	(travel day)
Late August: Follow-up Meeting with National Instruments	Summarize progress made during the second trip; get authorization for next steps

Presentations

Introduction Presentation

1. Personal Introductions

Technology Transfer Presentation Index

1. Technology Transfer and Commercialization Presentation
 - a. Workshop follow-up
2. IR Curriculum Presentation
3. Innovation Commercialization Presentation

Innovation Readiness and Commercialization

1. 10 modules offered in the GCG Innovation Readiness Training
2. Provide marketing materials for this training

Innovation Ecosystems Include

1. Technologies (and companion technologies)
2. Capital (VC, Angel, Bootstrapping, lenders, microlenders, crowdfunding)
3. Talent (academia, incubator space)
4. Know-how (experience and mentorship, IP)

Key Areas of Interest

1. Develop understanding of what partners want
2. Gather stakeholders to talk about innovations and what they want
3. Get more people in the room, and go more in depth
4. IC² and NI get their time
5. Collaboration is the goal, solution comes from collaboration
6. Have those cooperating present and show how it's done
7. Infrastructure and technical assistance (obtaining licenses, taxes, how to go about securing IP, zoning issues, government liaison help)
8. Helping traditional enterprises vs. economic gardening vs. transplanting talent
9. Keep an eye/ear out for partnerships to have on the ground presence

Priority Questions

1. What can we follow up on from the first trip? Expand on? Further develop?
2. What is the culture of cooperation locally? Regionally? Nationally?
3. What is the Kenyan/Nairobi narrative worth telling? Is it water? Is it something else?
4. What is the business model?
5. What is the strategy?
6. Desire to grow? National firms? International firms? What are the challenges? Scale issues?

Discussion Questions

1. How did you get involved?
2. What's the problem?
3. What's the cause of the problem?
4. What can we do about it?
5. What are the barriers to doing that?
6. What elements can help?
7. What's the ideal outcome?
8. How do you measure success?
9. What to do next when it's solved? Next problem?

Additional Meetings (Not scheduled yet)

- JICA - African Union - African innovation - Manabu Tsundoda (Dr. Eng), Chief Advisor
- Kenyatta University - Dr. Vincence Onywera, (Registrar for Research, Innovation and Outreach)

- Pan African University - Prof Gabriel Magoma, Director
- Meeting with David Muturi, Kenyan Institute of Entrepreneurship
- Meeting with Kenya Industrial Research and Development Institute

University Contacts:

- Kenyatta University
 - Chandaria Business Innovation and Incubation Center
- University of Nairobi
 - Dr. Kamau Gachigi, Coordinator University of Nairobi Science and Technology Park - Fab Lab
 - http://media01.24hrstech.com/PDFs/10A-Review_of_UoN_Science_and_Tech_Park.pdf
 - <http://www.voanews.com/content/fab-lab-igniting-revolution-in-kenya/1969051.htm>

Mr. Morris' Contacts and Government Contacts:

- Stanley Murage is contact (HE Kibaki's Chief of Staff, PhD from UoN)

Existing Incubators, Start-up spaces, and business developers:

- iHub: <http://www.ihub.co.ke/>
 - Jessica Colaço (Director of Partnerships)
 - Josiah Mugambi (Executive Director)
- NairobiGarage
 - Cooperative start-up office
 - <http://www.nairobigarage.com/>
- NaiLab: <http://www.nailab.co.ke/>
 - Sam Gichuru. is CEO
 - Recently had \$1.6 million invested from govt. <http://www.ventures-africa.com/2013/01/kenya-launches-a-1-6m-it-incubation-centre/>
- Kenya Industrial Research and Development Institute:
 - <http://www.kirdi.go.ke/centers/business-incubation>
- m:lab East Africa
 - <http://mlab.co.ke/contact/>
 - <http://mlab.co.ke/about/>
- Kenya Institute of Entrepreneurship (NGO)
 - CEO: David Muturi
 - <http://www.kim.ac.ke/contact>
 - <http://www.kim.ac.ke/about-kim>
- 88mph
 - Hannah Clifford

Water-Related Stakeholders:

- Aquaya (Improving Health through Clean Water)
 - <http://www.aquaya.org/tag/water-entrepreneurs/>
 - Ranjiv Khush, Executive Director and co-founder (in California)
 - Yunis Operating Director in Kenya
- WSUP Enterprises (working in Kenya and elsewhere, based in Nairobi)
 - <http://www.wsup.com/enterprises/>
 - Andy Narracott, Manager
 - Contact form: <http://www.wsup.com/enterprises/about-wsup-enterprises/contact-us/>
- Maji na Ufanisi (Water and Development)
 - Local NGO in Nairobi and Mombasa. Partner agency for University of Denver and University of Nairobi
 - <http://www.majinaufanisi.com/>

Driver:

- Elias of Mission Tours and Travel

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Appendix 9. Data on Kenya

General Risk Indicators

Global Rank	Selection Rank	Country	Short-term Political Rating	STPR, Security & External Threats	Long-term political rating	Short-term Economic Rating	STER, Economic Growth	Long-term Economic Rating	LTER, Economic Growth
81	1	Ghana	72.1	86.7	68.6	28.1	40.0	42.8	50
85	2	Tanzania	62.3	50	62.3	44.6	80	50.3	80
114	3	Uganda	51.7	50.0	53.7	44.6	60	47.4	35.0
116	4	Cameroon	66.2	53.3	45.7	44.4	50	41.6	30.0
121	5	Kenya	55.0	43.3	53.9	38.1	43.3	41.0	30.0
129	6	Ethiopia	47.5	40.0	40.7	33.3	46.7	38.8	45
Emerging Markets Averages			61.9	64.2	57.9	49.8	49	49.3	43.3
Global Markets Averages			64	66.4	61	51.7	48.3	51.7	42.9
Countries Ranked out of			193	193	192	186	185	186	184

Source: BMI Research, “Kenya Tourism Report Q2 2015” (Business Monitor International, 2015), retrieved from <http://www.marketresearch.com/Business-Monitor-International-v304/Kenya-Tourism-Q2-8757307/>.

Global Rank	Selection Rank	Country	Operational Risk Index	Labor Market Risk Index	Logistics Risk Index	Trade & Investment Risk Index	Crime & Security Risk Index	Country Risk Rating
87	1	Ghana	49.8	48.9	46.3	52	51.8	50.6
110	2	Nigeria	34.9	39.1	38.3	27.2	34.9	44.3
114	3	Uganda	33.0	40.9	26.2	33.2	31.8	43.9
116	4	Cameroon	33.3	42.0	33.6	23.3	34.3	43.4
121	5	Kenya	33.6	37.8	36.9	31.8	28.0	42.6
129	6	Ethiopia	36.0	33.4	36.3	30.2	43.9	38.7
Emerging Markets Averages			46	45.9	46.7	45.9	45.6	51.7
Global Markets Averages			49.3	48.8	49.9	49.2	49.3	54.4
Countries Ranked out of			170	170	170	170	170	175

Source: BMI Research, “Kenya Tourism Report Q2 2015” (Business Monitor International, 2015), retrieved from <http://www.marketresearch.com/Business-Monitor-International-v304/Kenya-Tourism-Q2-8757307/>.

Security Risk Indicators

Country	Security Risk Rating	Terrorism Risk	Inter-state Conflict Risk	Personnel Security Risk	Domestic Security Risk Rating	Short-term Terrorism Vulnerability
Ghana	76.4	86.0	80.0	63.3	74.7	68.4
Ethiopia	68.0	87.0	57.0	60.0	73.5	64.9
Cameroon	63.8	73.0	81.0	37.3	55.2	64.9
Uganda	63.4	69.0	64.0	57.3	65.2	74.0
Kenya	59.9	60.0	75.0	44.7	52.3	55.7
Nigeria	57.4	49.0	94.0	29.3	39.2	50.4
Average	70.6	75	75.8	61.1	68.1	66.4

Source: BMI Research, "Kenya Tourism Report Q2 2015" (Business Monitor International, 2015), retrieved from <http://www.marketresearch.com/Business-Monitor-International-v304/Kenya-Tourism-Q2-8757307/>.

Corruption Perception Index Comparison

Country	Corruption Perceptions Index (CPI) Rank
Ghana	63
Ethiopia	111
Tanzania	111
Kenya	136
Uganda	140
Cameroon	144

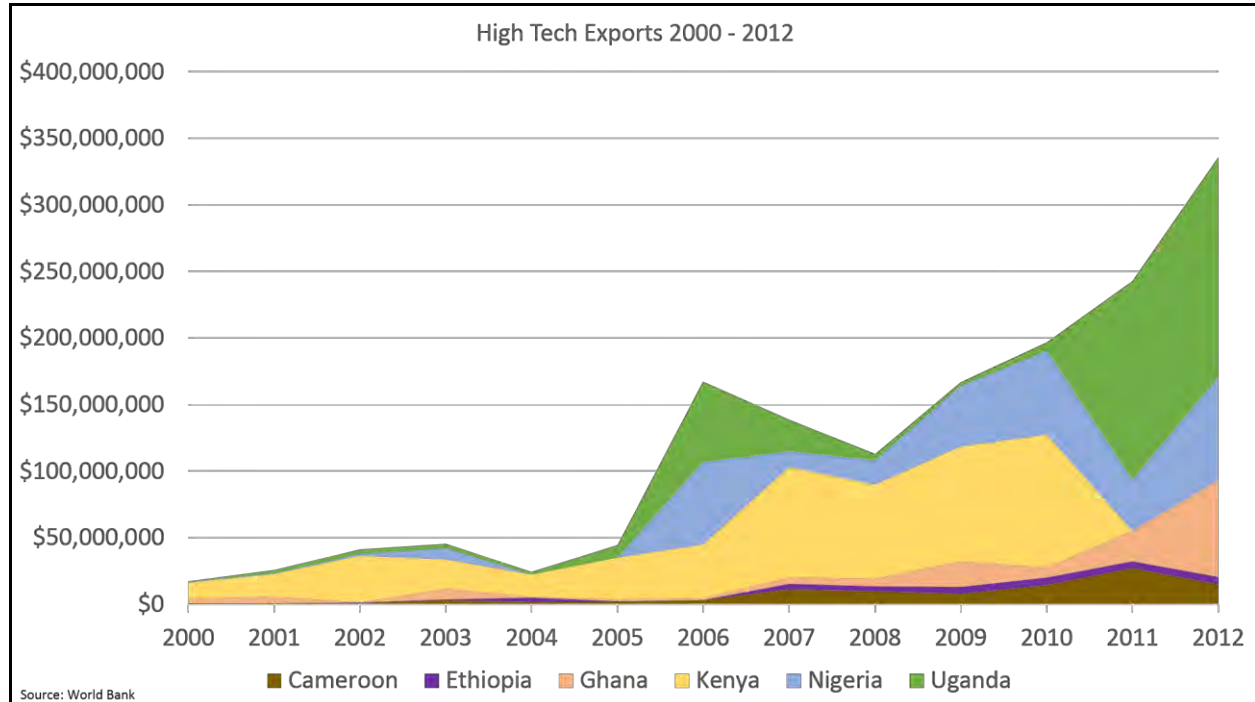
Source: "Corruption by Country/Territory" (Transparency International, 2013), retrieved from <http://www.transparency.org/country>.

Internationally Ranked Universities

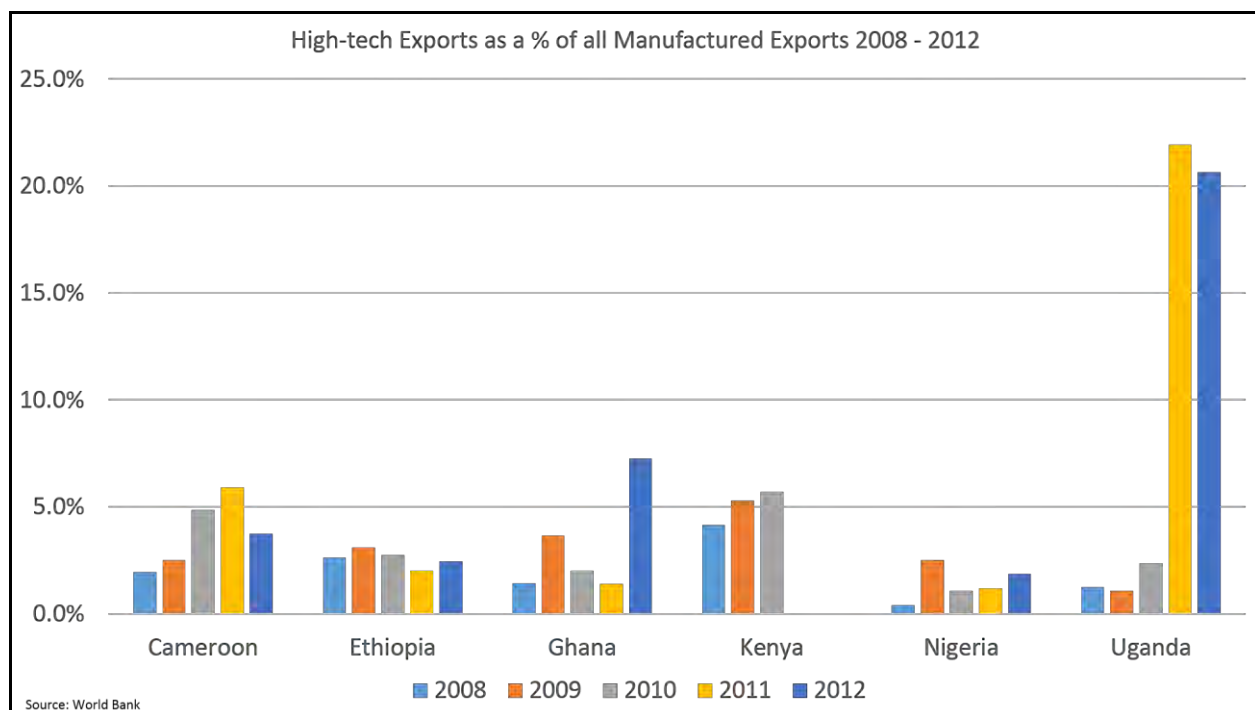
Country	QS-Ranked University	Location	Number of Students	Key College/Institute
Kenya	University of Nairobi	Nairobi	22,000	Science/Tech. Park
Cameroon	None	N/A	N/A	N/A
Ethiopia	None	N/A	N/A	N/A
Uganda	Makerere University	Kampala	40,000	College of Engineering, Design, Art, and Technology
Ghana	University of Ghana	Legon/Accra	38,000	Institute of Applied Science and Technology

Source: "QS World University Rankings" (Quacquarelli Symonds Limited, 2015).

Export Indicators



Source: "Research and Development Expenditure (% of GDP)" (The World Bank, 2015), retrieved from <http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS>.



Source: "Research and Development Expenditure (% of GDP)" (The World Bank, 2015), retrieved from <http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS>.

Macroeconomic Indicators

Country	GDP, Constant Prices (National Currency/Billions)	GDP, Constant Prices (% Change)	GDP Per Capita, Current Prices (US Dollars)	Total Investment as % of GDP	Inflation (% Change)	Volume of Imports (% Change)
Nigeria	68,397.10	6.966	3,416.49	14.988	8.292	5.599
Kenya	3,841.26	5.344	1,461.12	19.565	7.292	6.589
Cameroon	11,052.41	5.079	1,426.68	20.206	3.2	7.326
Ethiopia	602.071	8.196	547.981	30.104	7.716	7.705
Uganda	25,580.22	5.914	685.75	25.437	5.497	9.394
Ghana	33.962	4.474	1,353.16	24.584	15.726	-12.778

Source: “World Economic Outlook Database” (International Monetary Fund, 2014).

Skilled Labor Force

Metric	Nigeria	Kenya	Cameroon	Ethiopia	Uganda	Ghana	Indonesia
Gross Enroll. Ratio (%) in Tertiary Education	10.4 (2007)	4 (2009)	11.9 (2011)	2.8 (2005)	9.1 (2011)	12.2 (2012)	31.5 (2012)
Gross Domestic Expend. on R&D in PPP\$ (m)	644 (2007)	646 (2010)	N/A	207 (2010)	236 (2010)	149 (2010)	795 (2009)
Gov Expend. on Education (as % of GDP)	N/A	6.7 (2010)	3.1 (2012)	4.7 (2010)	3.3 (2012)	8.1 (2011)	3.6 (2010)
Researchers (Headcount)	17,624 (2007)	13,012 (2010)	4,562 (2008)	7,283 (2010)	2,823 (2010)	2,542 (2010)	41,143 (2009)
Researchers in Eng./Tech	N/A	1,750 (2010)	N/A	370 (2010)	275 (2010)	280 (2010)	N/A
Number of Universities	128	30	108	21	30	N/A	390 (2004)

Source: Statistical Capacity Building Division, “Labour Force Data Analysis: Guidelines with African Specificities” (African Development Bank, 2012).

Property Rights

Metric	Cameroon	Ghana	Ethiopia	Kenya	Nigeria	Uganda
Overall	4.3	5.5	4.4	4.6	3.9	4.9
Legal/ Political	3.3	5.3	3.2	3.4	2.9	3.8
Physical Property Rights	5.6	5.7	5.3	5.3	4.7	5.7
Intellectual Property Rights	4.1	5.6	4.8	4.8	4.1	5.3

Source: Francesco Di Lorenzo, “International Property Rights Index 2013” (Property Rights Alliance, 2014).

Country Risk Methodology

Component	Sub-Component	Rationale
Characteristics of Polity	System of government	Established democracies to be inherently more stable over the long term than other types of state, as unsuccessful governments can be overthrown within the existing political system.
	Constitutional framework	Systems based on written constitutions, which formally enshrine separation of powers and safeguard against elite/majority dominance offer better protection for civil liberties. Again, this reduces the appeal of revolutionary change.
	Rule of law	The state’s ability to protect its citizenry—and to do so without discrimination—is the cornerstone of a successful polity.
Characteristics of Society	Income distribution	Equality of income increases state legitimacy.
	Poverty	Low poverty rates are a sign of a successful state/functioning polity. High poverty indicates that the state is unable to fulfil its functions.
	Minorities	A high proportion of ethnic/religious minorities can be a problem, especially if there is a history of tension/violence, as it suggests that significant numbers of citizens are not committed to the current political/constitutional order.
Scope of State	Government spending	This is a proxy for state capacity. A low percentage indicates a weak state and vice versa.
	External constraints	This evaluates external threats to government’s sovereign power.
Policy-continuity	Policy-continuity	Policy continuity is a benefit in itself for investors. More importantly, it suggests lack of polarization within the political system.

Source: Francesco Di Lorenzo, “International Property Rights Index 2013” (Property Rights Alliance, 2014).

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Appendix 10. Kenya In-Country Meeting Notes

His Excellency, Mwai Kibaki, Third President of Kenya

Contact: Stanley Muragi

The former president and his staff discussed how Kenya's government leadership seeks to engage systemic cooperation across sectors to enhance Kenyan engineering capacity with entrepreneurial training. Very positive relations were established with NI/UT team.

This meeting with His Excellency (HE) President Kibaki (Kenya's former president who turned over power in January 2014) was a "courtesy call" to inform him of the work the project hopes to initiate in Kenya. Despite political controversy, HE Kibaki is widely regarded by Kenyans as a visionary. During his presidency he encouraged a nationwide effort to build transportation infrastructure and established free primary and secondary education for all Kenyans. He is regarded as the driving force who made possible Kenya's current position in East Africa.

Before the meeting, HE Kibaki's Chief of Media and Public Relations briefed the team on Professor Mbithi (VC of UoN) who, in addition to his experience, holds a master's degree in international economics. He expressed that Professor Mbithi is a well-liked, diligent, energetic man who has a diverse professional background. He is a veterinarian as well as the former Deputy Vice Chancellor of Finance. He said that Professor Mbithi was the most qualified candidate for the VC position and was elected by his peers in January 2015.

Stanley Murage briefed the team about their meeting with HE. He encouraged the team to focus on detail and how the partnership creates opportunities for Kenyans.

In the meeting, Malcolm Morris introduced the NI/UT team. Mr. Morris highlighted the positive meeting with University of Nairobi's Vice Chancellor the previous day. HE Kibaki expressed that the partnership and the progress it could accomplish in Kenya is "the most important matter." Key discussion points in the meeting included innovation among mechanical engineers in Kenya. One staff member lamented that students simply "create by the book" or import foreign ideas. The President's team wanted to know how to foster innovation and implement innovation in Kenya by Kenyans, and expressed the goal for Kenyan engineers to see themselves as innovators.

When discussing an NI/UT/UoN partnership, the group discussed that any project ought to go beyond the endless bookshelf of past research projects. HE Kibaki and his team mentioned the importance of having action come out of this partnership, and the need to "not make this another research project."

Hiroshima University: Dr. Akimasa Fujiwara, Professor and Dean of Graduate School of International Development and Economic Cooperation

The University of Nairobi and Jomo Kenyatta University of Agriculture and Technology stand out as suitable potential partners for cooperation on issues of entrepreneurship and wealth-creation.

Akimasa Fujiwara, Ph.D., Dean of the Graduate School of International Development and Economic Cooperation of Hiroshima University (IDEC), who was traveling in East Africa, met with the team to outline the structure of Kenya's three major universities: The University of Nairobi, Kenyatta University (KU), and Jomo Kenyatta University of Agriculture and Technology (JKUAT).

Dr. Fujiwara met with deans, vice-chancellors, and other high-level position holders. He used their business cards to depict the connections among Kenyan universities visually. He relayed that there is a top-down system of command and innovation dissemination within these universities: one must meet with the highest level first (the Vice Chancellor of the University or the Dean of the various schools/colleges within) and only then can a Memorandum of Understanding be drafted. With an MOU in place one can initiate details of partnership with lower levels of command (professors, etc.). Dr. Fujiwara used a family tree analogy to describe historical links among the three Kenyan universities.

The University of Nairobi, which is composed of six colleges, is the “grandmother” university, the oldest and most prestigious research university in Kenya and one of the top seven in the region. Its original College of Education splintered off to become Kenyatta University (KU), its “daughter.” Jomo Kenyatta University of Agriculture and Technology, known as JKUAT (pronounced jay-kwat), is the “granddaughter” university of the UoN, as formerly it was the agriculture and technology school of KU. JKUAT impressed Dr. Fujiwara as the institution most prepared for international partnership due to its strong leadership and capacity in engineering and agriculture. Pan African University (PAU), a consortium university with member campuses across the entire continent, is a “great granddaughter” institution. Dr. Fujiwara noted that each university created international partnership opportunities and each partnership seemed to become proprietary to individual institutions with limited collaboration among neighboring institutions.

iHub UXLab: John Paul M. Karijo, User Researcher

Visit and interview with young designer and researcher discussed the start-up community, digital collaboration laboratory, and hive-like network of partner start-up organizations that share four floors at the Bishop Magua Center.

In the Bishop Magua Center, located at George Padmore Lane and Ngong Road southwest of the city center, are myriad accelerators, tech start-ups, and organizations including the iHub, the m:Lab, NaiLab, Ushahidi, Gearbox, and Akirachix. The iHub was founded by a community of “makers” that sought to create a space for using the Internet reliably for their pursuits. They also are founders of BRCK, “a connectivity device for where electricity and Internet connections are

problematic both in urban and rural areas.” iHub developers and entrepreneurs pay a sliding scale of monthly membership dues to use the space and Internet.

iHub is Nairobi’s “Innovation Hub” for the technology community, an open space for the technologists, investors, tech companies and hackers. This space is a tech community facility with a focus on young entrepreneurs, web and mobile phone programmers, designers and researchers. The iHub strives to create an ecosystem around the Kenyan tech entrepreneur through their four arms: iHub Research, iHub Consulting, iHub Supercomputing Cluster, and the iHub User Experience (UX) Lab.

The m:Lab is an incubation facility for entrepreneurs and innovators with a focus on mobile technology funded by the World Bank. Similarly, NaiLab (Nairobi Lab) is a startup accelerator that offers a three- to six-month entrepreneurship program with a focus on growing innovative technology-driven ideas. NaiLab was first funded by The One Percent Club, a crowd funding network that has funded 800 initiatives in almost 80 countries. Ushaidi is a global organization that empowers people to use open source technologies, cross-sector partnerships, and ground-breaking ventures. Gearbox is Kenya’s first open makerspace for design and rapid prototyping, founded by Dr. Kamau Gachigi. AkiraChix is a non-profit organization that aims to inspire and develop a successful force of women in technology who will change Africa’s future. Jean Paul, a member of the iHub for a year and a half and a current employee researcher at the UX Lab, described the collection of businesses as a true ecosystem of support and creativity. They often leverage each other’s expertise and celebrate wins as collective.

Most promising for NI is the Gearbox expansion, which is unique among the other start-ups and community spaces as a specifically hardware-focused makerspace. There is a growing sentiment among Kenyan entrepreneurial leadership to help Kenya shift away from procurement and increase innovative manufacturing in country. Gearbox intends to be that link.

Jomo Kenyatta University of Agriculture and Technology (JKUAT): Department of Engineering Stakeholders

Primary Contact: Dr. Bernard K. Rop, Chairman, Department of Mining, Materials and Petroleum Engineering

Introductory meeting among engineering college leadership and staff revealed JKUAT is open to partnerships, outside stakeholder involvement, sharing knowledge and cooperating, academic partnerships, and hosting external workshops.

This meeting was a gathering for engineering and science stakeholders to review the proposed curriculum for JKUAT’s new Master’s program in Science and Engineering in Petroleum. Mr. Ngepi was invited to the meeting to introduce NI and their technologies, and Mr. Morrison and Ms. Puckett came as observers. This meeting was attended by the Dean of the School of Engineering, the Chairman of Mechanical Engineering, the Chairman of Mining, a professor from Technical University of Kenya, the Minister of Energy, professors from Biomechanics and other schools, JKUAT’s School of Mechanical Manufacturing and Materials Engineering, and the Department of Mining, Materials, and Petroleum Engineering.

JKUAT stakeholders see energy as one of the six pillars for an engineer's education under their 2030 vision. This degree program is being developed as a response to the growing demand for engineers and the recent discovery of oil and gas onshore and offshore. The JKUAT team believes that students ought to be trained in critical thinking and innovative thinking in oil and gas, and one way to do this is through research projects at the end of a student's second year of study.

The goal of the program is "graduating innovation-ready students." JKUAT is open to partnerships, outside stakeholder involvement, sharing knowledge and cooperating, academic partnerships, and hosting external workshops.

Jomo Kenyatta University of Agriculture and Technology (JKUAT): Dr. Waiganjo Esther, Department of Entrepreneurship, Technology, Leadership and Management

A discussion with directors of MA and BS of Entrepreneurship degree programs at JKUAT revealed some difficulty placing students in competitive engineering industry roles; another issue was limited industry relationships with academia and the government.

JKUAT offers a Bachelor of Arts and Master of Arts in Entrepreneurship. Dr. Esther's department also provides an entrepreneurship class open to students from various departments and degree plans throughout the university. The NI/UT team discussed the needs of her department, which mainly revolved around internships, fellowships, and professional placements.

Entrepreneurship programs started at JKUAT in 1992 with funding from UNDP and the government. The bachelor's degree program includes eight semesters of classes with one semester practicum, and the master's degree requires three semesters of coursework and one semester of research. Each year, the bachelor's program is taken by 100 government-sponsored students and 20 to 30 self-funded students. Overall, 30 percent of their programs are government funded, and 70 percent are funded by JKUAT. The Masters of Entrepreneurship is popular among already employed business people or entrepreneurs. There are strategic partnerships between JKUAT and industries such as the Kenyan Petroleum Board, which is the national institute that accepts five to ten students for partnership.

Some weaknesses of the degree programs reflect a lack of interdisciplinary coursework and applied training. Dr. Esther is always seeking external partnerships and mentorship for the students, and wants course content to reflect global standards. There are currently plans to align science, technology, and innovation into one degree program, perhaps a BSc in Innovation and Technology and a PhD in Technology Management

Dr. Esther is concerned about limited cooperation between JKUAT and private sector firms. If bureaucracy were not an issue, the department would like to encourage students to high levels of readiness using a more systematic way of teaching entrepreneurship skills. JKUAT hopes to offer more structured content that will incorporate international best practices and provide an exit program where students can meet people who will guide them.

Jomo Kenyatta University of Agriculture and Technology: Professor G.S. Namusonge, Dean of School of Entrepreneurship

A brief courtesy call to the Dean while team was on campus. He talked more about the entrepreneurship department at JKUAT and history of U.S. University-JKUAT partnerships, including the University of Illinois at Champaign, and expressed a desire to partner in the future.

Millennium Water Alliance Kenya, and Aqua for All: Tabitha Garretts

Dutch aid worker and funded researcher investigating how data can enhance the value chain of water management and distribution. Meeting revealed Aqua for All's current public private partnership with Sweetsense, a low-cost competitor for sensors.

Aqua for All (A4A) is a Dutch foundation, as well as a funder and developer of Millennium Water Alliance Kenya (MWAK). Its Young Experts Program (YEP) includes a fellowship program that brings on young experts to map drinking water trends and innovations. A4A partners with private sector businesses at the crossroads of customer service delivery and community engagement. Their organization seeks to match water supply with demand. A4A asks private companies to share collected data, and they leave drilling operations to the private sector.

A4A supports development programs and market exploration for environmentally committed partners such as Heineken. They also train communities on cleaning water, how to construct water points, and providing health services in schools. They have a two-year contract with MWAK to develop programs together. In their research, most innovations occur in Nairobi and its surrounding areas, as well as areas near the proposed LAPSET pipeline, like Wajir.

MWAK and A4A focus their efforts around three pillars of water sector development to be implemented over the next five years: data value chain development, development of new service delivery options, and developing new product models and capital access.

Projects related to data value-chain development have earned \$7 million. Current projects involve cost-sharing with various funders to focus data collection for water point mapping, hydrology data, and monitoring data to facilitate county-level government decision-making. Partners include IBM, Sweetsense, and Acacia as co-investors. One system in development allows users to purchase water at uncorrupt prices using mobile payments, and collects data on usage and replenishment of water sources. The uncorrupt price of water is approximately 15 cents per 10-20 liters.

The A4A new service delivery projects include exploring publicly-owned, privately-operated enterprises, in which a private company generates profits but reports to community and government. These projects respond to the fact that traditional truck-delivery of water from a water point to remote villages is expensive (\$850/month) and inefficient.

A4A's new product models and capital access development reflect barriers to funding projects in the water sector. The World Bank and the Water Safety Portal (WSP), a program of the World Bank, have both funded technology solutions in the water sector.

It would be useful to follow up with Acacia to learn what other development partners are involved in the data collection projects. There was also discussion about how NI could compliment IBM with the other partners.

Millennium Water Alliance Kenya (MWAK) and Care International

MWAK: Doris Kaberia, Director

CARE: Bogden Dumitru, Country Director

Discussion with prominent international non-governmental organizations revealed a funding priority for water-sector technology innovations in rural Kenya for water retention, recharge, and reuse, which require control and monitoring technologies.

Participants: Bogdan Dumitru, Country Director of Care International Kenya and employees of MWAK.

MWAK's current work focuses on mapping WASH's Stakeholders and identifying WASH innovations in Kenya. There is a need to update the information on this map, as each county's governor is looking for relevant information on water retention, recharge, and reuse. There is an opportunity for NI to help Care International and MWAK improve data-driven decisions.

Samuel Owen, Nairobi, Kenya

Discussion with American businessman with Kenyan business and political contacts revealed a detached but cooperative government/industry relationship that creates a desirable ecosystem to enter for foreign businesses and investment.

Mr. Owen is an American businessman who describes his work in Kenya as "the business of connecting people." For an hour and a half he discussed the business environment in Kenya. Meeting notes include information regarding the relationship between politics and the private sector, which Mr. Owen claims is relatively free of bureaucratic interference and corruption. Mr. Owen expressed his belief that there are many opportunities for western businesses to do very well in the Kenyan market. Mr. Owen discussed the rapid development of Kenya and the many large projects occurring now or in the near future, including LAPSET, the wind farm in Turkana, natural gas, and petroleum.

Strathmore University: iBiz and iLab

Contact: Bernard Chiira

A tour of a resource-rich business school and discussions with its students and staff revealed extensive corporate investment into the university's incubator and accelerator centers. Strathmore aims to be the education hub for Internet of Things studies.

Strathmore University (SU) is a private university for undergraduate and master's business students. On campus there are two software incubators, iLab for students, and iBiz for

community members and students who are launching a business. Discussions with two students (one accounting, one business) indicated a sense of support and sound mentorship from professors and lecturers, and perceived access to resources to succeed.

Strathmore University aims to become a hub for Internet of Things (IoT) research, as 90 percent of work done in the lab focuses on Internet development. The labs strive focus on engaging students in real-world projects with real impacts. For example, one student's project uses IoT data to analyze farm production to inform the farmer about which plants to plant, thus reducing food insecurity.

Decision makers for the iLab center select hardware based on price, ease of use, and previous business connections, for example Intel hardware had a local office in Kenya. Intel is donating hardware for students to use. SU reports the number of new students trained on the hardware (no cost sharing). Intel appears to receive no compensation beyond student exposure.

Strathmore University's partners include UN Kenya and Oracle, who participate in the iBiz and iLab centers for contract-based problem solving services. Private sector partners include Safaricom, Samsung, IBM Research Lab, Google, Oracle, Ericsson, SAP, IBM, Deloitte, CIO East Africa, IDEA Foundation, Softlock, D-Link, Hewlett-Packard, CDC, Laikipia Wildlife Forum, Clinton Foundation, ICT Authority, Pharmacy and Poisons Board, Ministry of Education Science and Tech, Ministry of Health, and Quarters for Africa.

International university partners include IT University of Copenhagen, OVG University of Magdeberg, University of Capetown, Pretoria University, Waterloo University, Ryerson University, Campus Vejle, University of Cambridge, Sunesis Consulting Limited, Moindi Consulting Company, Euclid Consulting Services Ltd, and Makini Schools.

University of Nairobi: Dr. Kamau Gachigi, Executive Director of Gearbox, UoN's Fabrication Laboratory

Discussion and tour of University of Nairobi's Fabrication Laboratory (FabLab) with Dr. Gachigi exposed a promising fit for both NI and IC² partnership value propositions for technology transfer and innovation commercialization in and outside of UoN.

Dr. Gachigi introduced Mr. Ngepi, Mr. Morrison, and Ms. Puckett to the Engineering School's Dean. He then took them on a guided to the University of Nairobi's Fabrication Laboratory (FabLab), a hardware-focused hackerspace for students and community members outside the University of Nairobi that he helped found for the school. During the visit, approximately 20 students from UoN were working in the FabLab. Dr. Gachigi explained that The African Development Bank donated \$50,000 and the private sector donated \$50,000 for FabLab hardware.

Dr. Gachigi informed the NI and UT team that he attended the IC² Institute years ago and had favorable opinions of their programs and services. He has worked directly with David Gibson, Ph.D., Senior Research Scientist at IC². He is interested in partnering with IC² on commercialization training and mentorship for his students. He recommended an NI partnership

for the GearBox project, which operates out of the iHub community space, which will open an independent hardware-driven workspace for engineers and students.

University of Nairobi: Professor M. F. Mbithi, Vice Chancellor

In this formal meeting with the Vice Chancellor (VC) of the University of Nairobi and key staff, the VC expressed determination and enthusiasm to pursue a memorandum of understanding with NI/UT to explore partnership toward a lab for multidisciplinary water sector projects.

This meeting of stakeholders from various departments and leadership levels on behalf of the UoN team resulted in the Vice Chancellor of the University of Nairobi giving the “go-ahead” to initiate a memorandum of understanding among The University of Nairobi, The University of Texas, and National Instruments. This meeting was critical to move a partnership forward.

The meeting established that water projects would be a starting point for a possible partnership. Prof. William “Bill” Okelo-Odengo, Director of the School of Computing and Informatics (SCI) suggested that any lab developed ought to be open to house many disciplines from the university. He acknowledged that computing transcends many disciplines. He also cited current UoN commitments to bridging disciplines through the Center 4 Development (C4D) Lab within SCI. The C4D Lab seeks to drive economic policy innovation through academic research to bridge the gap between theory and practice to produce graduates who can offer business and technology solutions through entrepreneurial skill. The various attendees expressed an enthusiasm to learn from each other and look for ways to collaborate and cooperate, specifically for the benefit of Kenyan water-sector development, and to build capacity of local entrepreneurial talent and engineers.

There was a consensus that the team needed to discuss more to move forward and that the opportunity to cooperate was a high priority. The Vice Chancellor suggested that the parties seek to draft an MOU by April 2015. Prof. Mbithi assigned Prof. William O. Ogara, Associate Professor in the Department of Public Health, Pharmacology, and Toxicology, to handle technical details to establish objectives and a timeline.

University of Nairobi: Professor Mwangi Mbuthia Jackson, Dean of School of Engineering

University of Nairobi’s School of Engineering leadership is focused on mechanical engineering and is interested in donation from NI; a cost-sharing compromise might be appropriate.

UoN has a revenue stream from bottling their own drinking water. There is an opportunity to scale this project.

University of Nairobi and Millennium Water Alliance Kenya: Professor Elijah Omwenga, Computing and Informatics

This introductory meeting between UT, NI, and University of Nairobi made clear that UoN leadership is looking for opportunities to enhance student opportunities to apply technology to solve problems.

Malcolm Morris, the chairman of the Millennium Water Alliance (MWA), a global alliance of international non-governmental organizations working to provide sustainable access to clean water in developing nations, is a businessman, diplomat and philanthropist who has worked in Kenya for 25 years. Mr. Morris helped arrange for the NI/UT team to meet with a team of University of Nairobi representatives within the School of Computing and Informatics to discuss potential partnership opportunities.

This “get to know you” meeting was to consider the team’s approach for the more formal meeting with the Vice Chancellor—the “CEO” of the University—the following Monday. Stanley Murage, Former Chief of Staff to the President and currently affiliated with Millennium Water Alliance Kenya (MWAK), and Prof. Elijah Omwenga (UoN), acted as co-moderators of the meeting.

After initial introductions, Deputy Vice Chancellor Prof. Lucy Irungu made clear her skepticism of technology to hold value for the University of Nairobi and requested an explanation of what NI and UT’s commitment and offerings would be.

Dr. Murage re-explained that this meeting was meant to be exploratory in nature, so firm commitments were premature. The discussion made it clear that UoN leadership is looking for opportunities to enhance student opportunities to apply technology to solve market-relevant problems. The UoN team stated their goals to improve water quality and availability in Kenya, monitor the replenishment of water aquifers and resources, leverage entrepreneurship training to innovate in the sector, and to provide software to solve challenges such as water quality and availability.

The NI, UT, and UoN team identified three areas of interest for partnership around water projects. First, to empower engineers to monitor water flow in Kenya, thus building capacity to solve water sector problems. Second, to train students to use NI technologies to monitor water resources, levels, and trends, and make data-driven decisions. Third, to assemble innovative techniques to solve problems across water sector systems. The UoN team expressed an interest in a lab for curriculum and training as a space for water-specific projects.

Water for All, David Kinyanjui, Director, and Zipporah Kinyanjui

A discussion about water sector development with a small business owner revealed an opportunity to bridge academic research with industry know-how to solve water sector challenges of distribution, logistics, and management. Zipporah Kinyanjui, a Kenyan businesswoman, discussed how the challenges to economic development are many, but business opportunities could be improved by enhancing traffic infrastructure and controls.

Mr. Kinyanjui, a Kenyan borehole expert and entrepreneur with an upbringing around NGO water projects, relayed his experience, challenges, and ideas about water systems development in Kenya. Mr. Kinyanjui has more than two decades of water sector experience around borehole drilling and management. After working for the international nonprofit, Living Water International, Mr. Kinyanjui left in 2010 to open his own business, Water for All, a private SME with two employees. Water for All organizes borehole drilling for individuals and institutions. Mr. Kinyanjui contracts with a network of plumbers, geologists, technicians, and electricians to

drill and maintain the wells. Mr. Kinyanjui does reasonably well as a small business owner drilling an average of four boreholes per month at 2 million KShs (~\$20,000) per well.

Mr. Kinyanjui's perception is that there was lack of technical know-how among potential water-sector contractors. Although operators are required to have training from the Kenya Water Institute (<http://www.kewi.or.ke/>), Mr. Kinyanjui lamented that "only 10 percent are actually skilled and complete their job well, while the other 90 percent are apprentices or poor technicians." Mr. Kinyanjui noted that the lack of qualified engineers was another problem. Skilled contractors are often highly specialized technicians and operators rather than engineers, and they commonly cannot find enough work. He cites a disconnect between academic institutions and technical practice as a key driver of these challenges, and notes that between academia and the private sector, "networks of cooperation are often not sustainable."

When asked about the future of water sector development, Mr. Kinyanjui expressed his disbelief in WASH agencies and organizations to deliver actionable solutions, pointing instead to the privatization of municipal water as a recent catalyst for sector innovation. Mr. Kinyanjui noticed that while WASH partners congregate in think tanks to execute research and policy plans, actionable solutions that affect regular Kenyans are slow to develop. Instead, he pointed to private sector business model innovations—like business focus on maintenance and management of existing boreholes—and technology innovations that have emerged around rainwater harvesting, dams, desalination, and conservation methods as the way forward for the sector.

Mr. Kinyanjui opined that the root issue for water sector development was the challenges of water resource distribution, logistics, and management. Mr. Kinyanjui expressed that he did not believe that borehole drilling was a long-term sustainable solution for their aquifer reserves. He said that other delivery methods like tanker delivery were costly and ineffectively managed.

Zipporah, or "Zippy," Mr. Kinyanjui's wife, discussed current development challenges within Nairobi and Kenya at large from a layperson's perspective. Mrs. Kinyanjui highlighted the lack of resource ownership and purchase data, traffic, governmental corruption, and general ignorance about the Kenyan government's Vision 2030 goals among persons outside of academic and governmental circles.

Mrs. Kinyanjui said that the Kenyan government's Department of Land Ministry suffers from lack of accurate information and data. For example, she argued that no one can really tell who owns what land or when resources are purchased. Government information management represents an opportunity. She lamented that traffic is major issue as roads are in place but are not managed well for the number of drivers; the poor transportation network impedes a business's ability to deliver or receive goods on time or conduct business effectively.

Mrs. Kinyanjui also mentioned a disconnect between trust and understanding among Kenyan citizens with the ruling government. For example, she said that people on street don't know about Vision 2030. As governmental terms are for a short time, tax dollars are commonly shifted by government to meet their own needs, or squandered in ways that bolster the leader's immediate security or reputation. Basic needs of the people are not often met.

World Bank Inter-agency Collaboration Committee Meeting in Kisumu, Kenya

Contact: Sophi Hickling, Sanitation and Hygiene Specialist

At an interagency conference of 80 stakeholder organizations working across Kenya, the team observed a high concentration of international funding organizations supporting innovative solutions to nationwide WASH development projects and initiatives.

For this all-day meeting, Mr. Morrison and Ms. Puckett flew to Kisumu, Kenya, a city on the north coast of Lake Victoria near the Ugandan border where various water, sanitation, and hygiene initiatives are being deployed and evaluated, to take part in the first day of a two-day interagency meeting and conference hosted by the World Bank and attended by more than 80 stakeholder organizations gathered to share status updates and new information regarding sustainable sanitation funding for development. These organizations included universities, Ministries of Health, The World Bank, and myriad NGOs and social entrepreneurs. Meeting notes provide detail on diverse actors in the water sector, including innovations and technology, funders, needs, and the business environment for entrepreneurs.

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Appendix 11. Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING

BETWEEN

THE UNIVERSITY OF NAIROBI

P.O. Box 30197-00100 GPO, Nairobi, Kenya
+254 20 318262

AND

NATIONAL INSTRUMENTS

11500 N Mopac Expy, Austin, TX 78759
+01 512 433 8000

AND

THE UNIVERSITY OF TEXAS AT AUSTIN

2300 Red River St, Austin, TX 78712
+01 512 471 3200

AND

MILLENNIUM WATER ALLIANCE

P.O. Box 14978-00800, Nairobi, Kenya
+01 202 296 1832

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (“hereinafter referred to as the “MOU”) executed this ____ day of ____ 2015, is between The University of Texas at Austin (hereinafter “UT”), National Instruments (hereinafter “NI”), the University of Nairobi (hereinafter “UON”), and the Millennium Water Alliance–Kenya Program (hereinafter “MWA-KP”). Individually, UT, NI, UON, and MWA-KP are each a “party”; collectively, they are the “parties”.

RECITALS

WHEREAS, the University of Nairobi has inter alia as one of its objectives, to provide directly or in collaboration with other institutions of higher learning facilities for University education including technological and professional education and research; and participate in the discovery and transmission of knowledge and the stimulation of intellectual life and cultural development of Kenya;

WHEREAS, National Instruments (www.ni.com) has made it possible for engineers and scientists to solve the world’s greatest engineering challenges with powerful platform-based systems that accelerate productivity and drive rapid innovation since 1976. The company has operations in more than 40 countries, and over 35,000 companies use its technologies in applications from healthcare to automotive. Through its Planet NI program, the company extends the reach of NI tools and technology into geographies where large gaps exist in technology access, engineering skills, and entrepreneurship, and it supports the development of future growth markets for NI;

WHEREAS, The University of Texas at Austin, through its Lyndon B. Johnson School of Public Affairs, seeks to develop leaders and ideas that will help the international community address critical public policy challenges in an ever increasingly interconnected and interdependent world. Additionally, through UT’s IC² Institute, an interdisciplinary research unit of The University of Texas at Austin, UT seeks to drive the theory and practice of entrepreneurial wealth creation through education, training, and provision of access to a global network of resources, expertise, and capital;

WHEREAS, The Millennium Water Alliance–Kenya Program (MWA-KP) is a USAID-funded initiative to provide safe water, improved sanitation, and hygiene education (WASH) to areas of rural Kenya impacted by drought and climate change.

With the objectives of reducing water-borne illness, promoting integrated water resource management to improve livelihoods, and developing partnerships with beneficiary communities for improved sustainability, MWA-KP is part of the Millennium Water Alliance (MWA), a global coalition of leading WASH-focused relief and development organizations

NOW, the University of Nairobi may wish to cooperate with National Instruments, The University of Texas at Austin, and the Millennium Water Alliance–Kenya Program to establish and implement programs involving the students and professors of the University of Nairobi and the personnel of NI in cooperation with technology transfer, training and mentorship. The four parties have agreed to cooperate as follows:

OBJECTIVE

National Instruments, The University of Texas at Austin, The University of Nairobi, and the Millennium Water Alliance–Kenya Project seek to form an innovative public-private partnership that can work together with Kenyan organizations and individuals to develop and expand stable, sustainable, and technologically advanced projects in Kenya. By bolstering an innovation ecosystem through the use of National Instruments technology and the research and business expertise at The University of Texas at Austin and The University of Nairobi, the partners will foster international collaboration with respect to technology commercialization training, management consulting, and technology-based innovation.

AREAS OF POSSIBLE COLLABORATION

- a) Jointly build technical capacity in instrumentation, analytics, testing and monitoring, especially in addressing clean water challenges in the region
- b) Joint teaching arrangements for postgraduate programs
- c) Joint supervision of postgraduate projects
- d) Student and faculty exchange

- e) Joint application for funding including donor funds, research participation with other collaborators
- f) Participation in joint academic seminars meetings including participation with other collaborators
- g) Any other collaborative efforts that may be determined from time to time

NOW, THEREFORE, in consideration of the mutual promises herein, The University of Nairobi (UON), National Instruments (NI), The University of Texas at Austin (UT), and the Millennium Water Alliance–Kenya Project (MWA-KP) agree that any Program established and implemented by UON, NI, UT, and MWA–KP during the term of this MOU shall be covered by and subject to the following terms, conditions, and obligations:

- 1) **Program Agreement:** To become effective, any agreement with respect to a specific Program ("Program Agreement") shall be reduced to writing and executed by authorized representatives of UON, NI, UT, and MWA–KP.
- 2) **Funding:** The three parties hereto undertake to jointly solicit for funds including donor funds, research grants, contributions, subscriptions and such related funds for the purpose of realizing any or all the objectives of the collaboration. Notwithstanding, any costs incurred under this MOU will be the responsibility of the party incurring such costs.
- 3) **Conflict:** In the event of conflict between the text of Program Agreement and the text of this MOU, this MOU shall govern.
- 4) **Amendment of Program Agreement:** No amendment to a Program Agreement shall be effective unless reduced to writing and executed by appropriate representatives of the involved parties.
- 5) **Management of Collaboration**

Each party will designate a liaison to approve the Program Agreement and maintain communications with other parties.

- 6) **Notices:** All notices under this MOU shall be in writing and delivered by mail or e-mail, return receipt requested. The notice shall be sent to the addresses and persons set forth below. A party may change its designed person and address by written notice to the other parties.

If to NI:

Jimmy Huang
Marketing Manager, Planet NI Program
National Instruments
Email: jimmy.hwang@ni.com

If to UON:

William O. Ogara, PhD
Prof., Dept. of Public Health
University of Nairobi
P.O. Box 00625-29053
Nairobi, Kenya
Email: wogara@uonbi.ac.ke

With a copy to:

Elijah I. Omwenga, PhD
Assoc. Prof., Computing and Informatics
University of Nairobi
P. O. Box 30197-00100
Nairobi, Kenya
Email: eomwenga@uonbi.ac.ke

If to UT:

David Eaton, PhD
Professor, LBJ School of Public Affairs
P.O. Box Y
Austin, Texas, USA 78713
Email: eaton@austin.utexas.edu

With a copy to:

Associate Director
Office of Sponsored Projects
101 E. 27th Street, NOA 5.300
Austin, Texas, USA 78712
Email: osp@austin.utexas.edu

Robert Peterson
Director, IC² Institute
2815 San Gabriel St.
Austin, Texas, USA 78705
Email: rap@mail.utexas.edu

If to MWA–KP:

Doris Kaberia
MWA–KP Director, Millennium Water Alliance
P.O Box 14978-00800
Nairobi, Kenya
Email: doriskaberia@fh.org

- 7) **Oral Representations:** No oral representations of any officer, agent, or employee of NI, UON, UT, or MWA–KP shall affect or modify any obligations of either party under this MOU or any Program Agreement.

- 8) **Amendment to MOU:** This MOU is the entire understanding between the parties with respect to the subject matter described. No amendment to this MOU shall be valid unless reduced to writing and signed by an authorized representative of each party.
- 9) **Assignment:** Neither this MOU nor a Program Agreement may be assigned by either party without prior written approval of the other party.
- 10) **Duration of Memorandum:** This Memorandum of Understanding shall come into effect from the date of execution and shall remain in force for a period of five years. This MOU may be terminated by any party with 10 days prior written notice to the other parties.
- 11) **Applicable Law:** All parties shall abide by the laws, rules and regulations of the jurisdiction in which they are incorporated.
- 12) **Liability:** Each party shall be responsible for its own negligent acts or omissions to the extent permitted by the laws of the jurisdiction in which it is incorporated.

IN WITNESS WHEREOF, the Parties hereto have executed this Memorandum of Understanding this _____ Day of _____ 2015

SIGNED for and on behalf of the **UNIVERSITY OF NAIROBI:**

PROF. PETER M. F. MBITHI, Ph.D.

VICE- CHANCELLOR

UNIVERSITY OF NAIROBI

In the Presence of: _____

SIGNED for and on behalf of **NATIONAL INSTRUMENTS**

VICTOR MIERES
VICE PRESIDENT, EMERGING MARKETS
NATIONAL INSTRUMENTS

In the Presence of: _____

SIGNED for and on behalf of **THE UNIVERSITY OF TEXAS AT AUSTIN:**

JUAN SANCHEZ, PH.D.
VICE PRESIDENT, RESEARCH
THE UNIVERSITY OF TEXAS AT AUSTIN

In the Presence of: _____

SIGNED for and on behalf of **MILLENNIUM WATER ALLIANCE–KENYA PROJECT:**

DORIS KABERIA
DIRECTOR, MWA–KP
MILLENNIUM WATER ALLIANCE

In the Presence of: _____

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Appendix 12. Potential Funders in Kenya

Kenya Grantmakers

Grantmaker Name	Contact	Country	Telephone	E-mail	URL
Ace Africa UK	Mr. Derek Walmsley	England		info@ace-africa.org	http://www.ace-africa.org
African Medical And Research Foundation (United Kingdom), Ltd.	Samara Hammond, CEO	England		info@amrefuk.org	http://www.amref.org/uk
African Relief Fund	African Relief Fund	England		info@arf.org.uk	http://www.arf.org.uk
Aga Khan Development Foundation		Afghanistan	799222409	info@akdn.org	http://www.akdn.org/
Aga Khan Foundation USA	Dr. Mirza Jahani, CEO	United States			http://www.akdn.org/AKF
Aid for Starving Children	Joseph Spiccia, Vice-Pres.	United States	(707) 528-3499	info@aidforstarvingchildren.org	http://www.aidforstarvingchildren.org
Akiba Uhaki Foundation		Kenya		info@akibauhaki.org	http://www.akibauhaki.org
American Jewish World Service	Ruth W. Messinger, Pres.	United States	(212) 792-2900	ajws@ajws.org	http://www.ajws.org
Apt Action On Poverty	Mr. Andy Jeans	England		info@aptuk.org.uk	http://www.aptuk.org.uk
The Ashden Trust		England		ashdentrust@sfct.org.uk	http://www.ashdentrust.org.uk/index.html
Association Of Commonwealth Universities	Keith Stephenson	England		info@acu.ac.uk	http://www.acu.ac.uk
The British And Foreign School Society	Mrs. Imogen Wilde	England		director@bfss.org.uk	http://www.bfss.org.uk
British Council for Prevention of Blindness	Stephen Silverton	England		info@bcpb.org	http://www.bcpb.org
Build Africa		England		hello@build-africa.org.uk	http://www.build-africa.org
CEDAR Foundation	Lynda Bentall, Pres.	Canada		info@cedarfoundation.com	http://www.cedarfoundation.com/
Chain of Hope	Miss Emma Scanlan	England		emma@chainofhope.org	http://www.chainofhope.org
Charity Projects	Mr. Colin Simon	England		info@comicrorelief.com	http://www.comicrorelief.com
Children With Aids Charity	Children With Aids Charity	England		info@cwac.org	http://www.cwac.org
Christadelphian Meal A Day Fund	Paul Lucas	England		info@meal-a-day.org	http://www.meal-a-day.org
City and Guilds of London Institute	David Miller	England		david.miller@cityandguilds.com	http://www.cityandguilds.com
Arthur S. DeMoss Foundation	Nancy S. DeMoss, Chair.	United States			
Elim Foursquare Gospel Alliance	Robert Millar	England		info@elimhq.net	http://www.elim.org.uk
The English Province of The Institute of Franciscan Missionaries of Mary	Sister Mary Fitzpatrick	England		provbursuk@aol.com	http://www.fmmii.org
The European Case	Vicky Lester	England		ecch@ecch.com	http://www.ecch.com

Grantmaker Name	Contact	Country	Telephone	E-mail	URL
Clearing House, Ltd.					
Food and Agricultural Research Management, Ltd.	Karen Thompson	England		farmafrica@farmafrica.org.uk	http://www.farmafrica.org.uk
The Gatsby Charitable Foundation	Mr. Alan Peter Bookbinder	England		contact@gatsby.org.uk	http://www.gatsby.org.uk
Global Angels, Ltd.		England		info@globalangels.org	http://www.globalangels.org
Global Christian Interaction, Inc.		United States			
Global Philanthropy Alliance		United States	(269) 281-3520	info@globalphilanthropyalliance.org	http://www.globalphilanthropyalliance.org
The Guru Nanak Nishkam Sewak Jatha (Birmingham) UK	Mr. Mohinder Singh	England			
Hope HIV	Stephen Maile	England		info@hopehiv.org	http://www.hopehiv.org
The Hugh Pilkington Charitable Trust	Mr. Michael Nunn	England		info@hpct.org	
ID Identifying Discourse, Inc.		United States	(518) 429-3458	Info@identifyingdiscourse.org	http://identifyingdiscourse.org
INDEPTH Network		Ghana		info@indepth-network.org	http://www.indepth-network.org/index.php?option=com_content&task=view&mapid=13&Itemid=28
Institute for Religious Research		United States			
The Institute of Brewing & Distilling	Simon Jackson, Exec. Dir.	England		enquiries@ibd.org.uk	http://www.ibd.org.uk
The Institute of Materials, Minerals & Mining	Ray Milbank, Finance Dir.	England		director@iom3.org	http://www.iom3.org
The International Development Research Centre	Isabelle Bourgeault-Tasse	Canada	(+1-613) 236-6163	info@idrc.ca	http://www.idrc.ca/EN/Pages/default.aspx
International Fellowships Fund	Joan Dassin, Exec. Dir.	United States	(212) 883-8200		http://www.fordifp.org
International Humanity Foundation		United States	(858) 597-0232	ihf@ihfonline.org	http://www.ihfonline.org/
International Rescue Committee, Inc.	David Miliband, Pres. and CEO	United States	(212) 551-3000	fundraising@their.org	http://www.theirc.org
International Youth Foundation		United States	(410) 951-1500	youth@iyfnet.org	http://www.iyfnet.org
Islamic Relief Worldwide	Mr. Javed Akhtar	England		middleeast@irworldwide.org	http://www.islamic-relief.com
Kenya Children's Fund	Ginger Palm, Pres. and CEO	United States	(952) 938-2705	info@kenyachildrensfund.org	http://www.kenyachildrensfund.org
Kids Can Free The Children		United States		info@freethechildren.com	
Lifestream Foundation	Colleen Johannsen, Pres.	United States	(651) 779-8366		
Lift Up Africa	Richard M. Levy, CEO	United States	(503) 408-6838	info@liftupafrica.org	http://www.liftupafrica.org
The London Mathematical Society	Fiona Nixon, Exec. Secy.	England		lms@lms.ac.uk	http://www.lms.ac.uk
Marafiki Global Aids Ministry		United States		marafikiglobalaidsministry@yahoo.com	
Mercy Center Foundation	John Njoroge,	United States	(240) 793-3188	mercyprojectlare@gm	http://www.mercyproject.org/

Grantmaker Name	Contact	Country	Telephone	E-mail	URL
USA, Inc.	Chair.			ail.com	
Mercy's Hope		United States			
Messengers of Mercy	Dr. Soon Ja Choi, Exec. Dir.	United States	(630) 580-5074	mominfo@mommercy.org	http://www.messengersofmercy.org
The Methodist Church In Great Britain	Reverend Gareth Powell	England		lcp@methodistchurch.org.uk	http://www.methodist.org.uk
The Monument Trust	Alan Bookbinder	England			http://www.sfct.org.uk/monument.html
Mpala Wildlife Foundation, Inc.	Kay Berney	United States	(410) 244-7507		http://www.mpala.org
New Media Centers		United States	(512) 425-4200		http://www.nmc.org
Play Source International, Inc.		United States			http://www.hearts4kenya.com/
Practical Action	Pat Adey	England		practicalaction@practicalaction.org.uk	http://www.practicalaction.org
The Rowan Charitable Trust	Jonathan C.M. Tippet	England			
The Samworth Foundation	Miss. W.A. Bateman	England			http://www.samworthbrothers.co.uk/index.asp
The Arthur B. Schultz Foundation	Erik B. Schultz, Chair; Rachael K. Richards, Exec. Dir.	United States	(307) 714-5665	info@absfoundation.org	http://www.absfoundation.org
The Shared Earth Foundation	Caroline D. Gabel, CEO and Pres.	United States	(410) 778-6868	sharedearth@aol.com	http://www.sharedearth.org/
Smile Train, Inc.	Susannah Schaefer, Exec. Vice-Chair, CEO	United States	(212) 689-9199	info@smiletrain.org	http://www.smiletrain.org
Survive - Miva	Simon Patrick Foran	England		info@survive-miva.org	http://www.survive-miva.org
The Sylvia Adams Charitable Trust	Jane Young, Dir.	England		info@sylvia-adams.org.uk	http://www.sylvia-adams.org.uk
Tropical Biology Association	Dr. Rosemary Trevelyan, Dir.	England		tba@tropical-biology.org	http://www.tropical-biology.org
Uhai Eashri		Kenya	254 20 2330050	info@uhai-eashri.org	http://www.uhai-eashri.org/
The Vardy Foundation	Sir Peter Vardy	England			http://vardyfoundation.com
Vocational Training Charitable Trust	Stephen Vickers	England		info@vtct.org.uk	http://www.vtct.org.uk
Watch Tower Bible And Tract Society Of Britain	D. J. Carpenter	England			
Sanford Westcott Memorial Youth Foundation, Inc.		United States		rwest@vol.com	http://www.westcott.org
The World Children's Fund		England		info@worldchildrensfund-uk.org	http://www.worldchildrensfund.org.uk
World Concern Development Organization		United States	(206) 546-7201	info@worldconcern.org	http://www.worldconcern.org
The World Federation Of Khoja Shia Ithna-Asheri Muslim Communities	Mohamed Lakha	England		secretariat@world-federation.org	http://www.world-federation.org
Worldwide Orphans Foundation		United States	(973) 763-9961	info@wwo.org	http://www.wwo.org

Source: Foundation Directory Online (Regional Foundation Library, 2014).

Existing Kenya-Focused Grants

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
American Jewish World Service	NY	Kenya Orphans Rural Development Program	Nairobi	2009	\$30,000	For Community Support for Orphans and Vulnerable Children. To strengthen the capacity of community groups to sustain the operations of the development centers through income generation, food-security initiatives, basic service provision and HIV-prevention efforts
Carnegie Corporation of New York	NY	African Network of Scientific and Technological Institutions	Nairobi	2009	\$25,000	To allow for participation of representatives of Universities supported by Corporation at regional conference on science and technology in Africa
Carnegie Corporation of New York	NY	African Network of Scientific and Technological Institutions	Nairobi	2007	\$25,000	To allow for participation of representatives of Universities supported by Corporation at regional conference on science and technology in Africa
The Christensen Fund	CA	Environmental Research Mapping and Information Systems in Africa	Nakuru	2005	\$104,728	For participation of Ethiopian, Central Asian and First Nation Canadian participants in international conference and training on participatory mapping in Nairobi, and follow up publication and dissemination to build and share knowledge of cultural mapping among indigenous and local communities worldwide
The Christensen Fund	CA	Kenya Community Development Foundation	Nairobi	2010	\$96,700	For capacity building for Ethiopian and Kenyan Christensen partners working with stewards in Kenya and Ethiopia to deliver their services in ways that understand the ground, respect locally existing knowledge and enhance opportunities for diversified livelihoods
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2007	\$5,600	
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2006	\$30,000	
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2004	\$24,000	
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2009	\$9,000	
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2009	\$5,000	
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2011	\$15,000	
Firelight Endowment	CA	WEM Integrated Health Services	Thika	2011	\$75,000	
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2009	\$600,000	For tie-off general support to effectively mobilize resources for building permanent funds for grant making toward development of communities
Ford Foundation	NY	Community Based Development Services	Nairobi	2009	\$200,000	For final support for human rights education training in primary and secondary schools in Kenya

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2005	\$520,000	For endowment support to advance community development and philanthropy in East Africa and establish new Arts and Culture Innovation Fund
Ford Foundation	NY	African Conservation Centre	Nairobi	2005	\$330,000	For general support to build technical and institutional capacity of communities to improve natural resource management in Kenya's South Rift Valley and throughout East Africa
Ford Foundation	NY	World Wide Fund for Nature-Eastern Africa Regional Program Office	Nairobi	2005	\$150,000	For tie-off support to build community capacity in Kwale District to conserve coastal forests and effectively manage natural resource-based enterprises and for revolving loan fund
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2004	\$200,000	For Ford Foundation 40th Anniversary Scholarship Fund to underwrite secondary school scholarships for gifted underprivileged children
Ford Foundation	NY	Community Based Development Services	Nairobi	2004	\$100,000	For human rights education training in primary and secondary schools in Kenya
Ford Foundation	NY	Community Based Development Services	Nairobi	2007	\$200,000	For human rights education training in primary and secondary schools in Kenya
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2007	\$150,000	For Changamote Arts and Culture Innovation Fund's grant-making program and for program development, public outreach and capacity building
Ford Foundation	NY	Liverpool VCT and Care Kenya	Nairobi	2010	\$300,000	For research, capacity building, grant making and expanded sexuality and reproductive health and rights and HIV/AIDS services to at-risk populations and to help them engage in HIV/AIDS policy dialogues
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2006	\$250,000	To establish and incubate Kenya Human Rights and Social Justice Fund
Ford Foundation	NY	Liverpool VCT and Care Kenya	Nairobi	2006	\$50,000	For HIV prevention and care program for male sexual minorities
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2006	\$3,000,000	For endowment support to strengthen and diversify financial base and enhance grant-making program
Ford Foundation	NY	Community Based Development Services	Nairobi	2006	\$100,000	For human rights education training in primary and secondary schools in Kenya
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2007	\$500,000	For general support to effectively mobilize resources for building permanent funds for grantmaking toward development of communities
Ford Foundation	NY	Liverpool VCT and Care Kenya	Nairobi	2007	\$300,000	To strengthen organizing capacity of marginalized groups to gain voice and visibility in HIV/AIDS policy-making processes and service provision
Ford Foundation	NY	Poverty Eradication Network	Nairobi	2008	\$300,000	For training and technical assistance to strengthen organizational capacity of foundation grantees in East Africa

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						and for internal capacity-building
Ford Foundation	NY	Kenya Gatsby Charitable Trust	Nairobi	2008	\$100,000	To reconstruct businesses and create workspaces for vulnerable sections of community affected by post-election violence in Western and Rift Valley parts of Kenya
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2008	\$141,000	For Changamoto Arts and Culture Innovation Fund's grant-making program and for program development, public outreach and capacity building
Ford Foundation	NY	Shanyama Consultancy Limited	Nairobi	2004	\$100,000	To organize four public lectures by renowned personalities as part of 40th anniversary celebration of foundation grant making in East Africa
Ford Foundation	NY	K-Rep Holdings Limited	Nairobi	2003	\$250,000	To establish financially sustainable and replicable microfinance delivery system for smallholder farmers in Kenya
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2003	\$672,894	For endowment fund to advance community development and philanthropy in Eastern Africa
Ford Foundation	NY	African Centre for Technology Studies	Nairobi	2003	\$250,000	For conferences and meetings to consolidate Pan-African network on land and resource rights
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2003	\$650,000	For general support for grantmaking, asset development and management and governance and to establish Ford Foundation 40th Anniversary Scholarship Fund
Ford Foundation	NY	Shanyama Consultancy Limited	Nairobi	2003	\$100,000	To coordinate and manage activities celebrating joint 40th anniversary of Kenya's independence and Nairobi office grant making
Ford Foundation	NY	Kenya Community Development Foundation	Nairobi	2003	\$74,000	To establish secretariat for East Africa Association of Grant Makers
Ford Foundation	NY	Strathmore University	Nairobi	2013	\$500,000	For training and capacity building of Governors for better management of county governments
Ford Foundation	NY	Commission on Revenue Allocation	Nairobi	2013	\$70,000	For training to enhance the performance of women leaders by providing them with the requisite knowledge and skills to maximize delivery of services in local government institutions of Kenya
Bill & Melinda Gates Foundation	WA	African Virtual University	Nairobi	2006	\$417,700	To expand bandwidth access to more universities and national research and educational networks in Africa
Bill & Melinda Gates Foundation	WA	Alliance for a Green Revolution in Africa	Nairobi	2006	\$24,667,000	To improve access of poor farmers to agricultural technologies in Africa
Bill & Melinda Gates Foundation	WA	African Women in Agricultural Research and Development	Nairobi	2012	\$14,000,000	To equip more women agricultural scientists in sub-Saharan Africa
Bill & Melinda Gates Foundation	WA	Egerton University	Njoro	2012	\$100,000	To develop a simple, cost-effective, solar-powered grain drying unit for prevention of aflatoxin contamination

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						in stored grain
The William and Flora Hewlett Foundation	CA	Liverpool VCT and Care Kenya	Nairobi	2007	\$325,000	For strengthening linkages between SRH (Sexual and Reproductive Health); HIV/AIDS services in sexual violence programs
The William and Flora Hewlett Foundation	CA	Liverpool VCT and Care Kenya	Nairobi	2008	\$25,000	For emergency relief funding
The William and Flora Hewlett Foundation	CA	Planned Parenthood Federation, International	Nairobi	2013	\$100,000	For the Africa Regional Office performance-based funding position. The Africa Regional Office of the International Planned Parenthood Federation (IPPF ARO) provides technical and financial support to the Federation's 47 Member Associations in sub-Saharan Africa. In service of the Federation's goal to improve performance, this grant would support continuing efforts to develop the capacity of IPPF ARO's Member Associations to improve quality and performance. Under previous grants, IPPF trained multiple Member Associations in sub-Saharan Africa
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2011	\$97,000	For reliable, quality and affordable essential medicines, medical supplies and training to the larger healthcare community in Kenya
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2003	\$10,000	For Savlon program, to educate health care providers on the prevention of opportunistic infections
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2003	\$10,000	For Tibozole program, to fund the distribution of tablets to alleviate the suffering of AIDS patients and to educate of health professionals
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2003	\$10,000	For Tibozole program, to fund the distribution of tablets to alleviate the suffering of AIDS patients and to educate of health professionals
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2004	\$34,780	For Tibozole program, to fund the distribution of tablets to alleviate the suffering of AIDS patients and to educate of health professionals
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2006	\$160,000	For Tibozole program, to fund the distribution of tablets to alleviate the suffering of AIDS patients and to educate of health professionals
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2008	\$126,605	For reliable, quality and affordable essential medicines, medical supplies, training, and other pharmaceutical services to the larger healthcare community in Kenya
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2009	\$160,000	For reliable, quality and affordable essential medicines, medical supplies, training, and other pharmaceutical services to the larger healthcare community in Kenya
King Baudouin Foundation United States, Inc.	NY	Mission for Essential Drugs and Supplies	Nairobi	2010	\$149,000	For reliable, quality and affordable essential medicines, medical supplies and training to the larger healthcare

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						community in Kenya
Microsoft Corporation Contributions Program	WA	Arid Lands Information Network-Eastern Africa	Nairobi	2010	\$10,000	For Kenya NGO Connection Day
Monsanto Fund	MO	Kenya Community Development Foundation	Nairobi	2011	\$11,000	
Charles Stewart Mott Foundation	MI	Kenya Community Development Foundation	Nairobi	2012	\$50,000	For research activities on various forms of giving in Africa, mobilizing rich Africans to give to deserving causes, and holding a conference for African grantmakers in South Africa to share knowledge and experiences
Mustard Seed Foundation, Inc.	VA	Kenya Community Development Foundation	Nairobi	2008	\$3,000	
The David and Lucile Packard Foundation	CA	Centre for African Family Studies	Nairobi	2007	\$300,000	To build capacity of NGOs in Ethiopia and Nigeria to meet FP/RH and HIV/AIDS needs at country level
The David and Lucile Packard Foundation	CA	African Population and Health Research Center	Nairobi	2008	\$180,000	For ten-year evaluation of Population Program's Ethiopia subprogram
The David and Lucile Packard Foundation	CA	Centre for African Family Studies	Nairobi	2009	\$850,000	To build capacity and provide technical support to organizations carrying out family planning and reproductive health programs in Ethiopia, Kenya and Rwanda
The David and Lucile Packard Foundation	CA	Christian Health Association of Kenya	Nairobi	2012	\$500,000	For recommended to strengthen the capacity of church-run health facilities to develop and implement family planning programs in Uganda and Kenya
Raskob Foundation for Catholic Activities, Inc.	DE	Education for Life Program	Nairobi	2007	\$124,102	To address problems of continued spread of HIV/AIDS, especially as it affects youth, through replication and extension of existing prevention programs; to improve and multiply facilitation of such programs through facilitator training, refresher and monitoring programs; for advocacy to address stigmatization and exploitation of PLWA's, HIV/AIDS orphans and vulnerable children; and to provide special programs for children and caregivers
Raskob Foundation for Catholic Activities, Inc.	DE	Holy Ghost Fathers	Nairobi	2006	\$20,000	Toward program costs to train health promoters and conduct community health camps among villages affiliated with St John Baptist Parish
Raskob Foundation for Catholic Activities, Inc.	DE	Education for Life Program	Nairobi	2006	\$118,197	To address problems of continued spread of HIV/AIDS, especially as it affects youth, through replication and extension of existing prevention programs, to improve and multiply facilitation of such programs through facilitator training, refresher and monitoring programs, for advocacy to address stigmatization and exploitation of PLWA's, HIV/AIDS orphans and vulnerable children, and

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
						to provide special programs for children and caregivers
Raskob Foundation for Catholic Activities, Inc.	DE	Education for Life Program	Nairobi	2008	\$132,830	To address the problems of the continued spread of HIV/AIDS, especially as it affects the youth, through replication and extension of existing prevention programs; to improve and multiply facilitation of such programs through facilitator training, refresher and monitoring programs; for advocacy to address the stigmatization and exploitation of PLWAs, HIV/AIDS orphans and vulnerable children, and to provide special programs for the children and caregivers
The Rockefeller Foundation	NY	African Agricultural Technology Foundation	Nairobi	2004	\$66,825	For official launch as entity that will link needs of resource-poor farmers with potential technological solutions to create food security and poverty reduction in sub-Saharan Africa
The Rockefeller Foundation	NY	Kenya National Academy of Sciences	Nairobi	2004	\$7,574	Toward organizing series of public lectures to enhance awareness and management capacity on science and technology policy issues in Kenya
The Rockefeller Foundation	NY	African Agricultural Technology Foundation	Nairobi	2006	\$1,000,000	For general support of mission to develop and implement projects for transferring proprietary technologies that meet needs of smallholder farmers in sub-Saharan Africa
The Rockefeller Foundation	NY	African Agricultural Technology Foundation	Nairobi	2006	\$2,000,000	For general support of mission to develop and implement projects for transferring proprietary technologies that meet needs of smallholder farmers in sub-Saharan Africa
The Rockefeller Foundation	NY	Kenya National Academy of Sciences	Nairobi	2005	\$16,500	Toward national workshop on role of science and technology capacity in achieving Millennium Development Goals, held in Nairobi
The Rockefeller Foundation	NY	African Agricultural Technology Foundation	Nairobi	2005	\$478,500	For general support of mission to develop and implement projects for transferring proprietary technologies that meet needs of smallholder farmers in sub-Saharan Africa
The Rockefeller Foundation	NY	Tropical Institute of Community Health and Development in Africa	Nairobi	2003	\$79,332	Toward research project to identify, assess and develop improved and sustainable community-based health management information system in Kenya
The Rockefeller Foundation	NY	National Hospital Insurance Fund	Nairobi	2011	\$229,980	For study to provide policymakers with evidence of appropriate structure for a Health Insurance Subsidy program that will serve Kenya's poorest populations
The Rockefeller Foundation	NY	Kenya Community Development Foundation	Nairobi	2011	\$125,005	For use by African Grantmakers Network in support of the development of a platform for the engagement of high net worth individuals in Africa and Africans in the diaspora to support the growth of African philanthropy

Grantmaker Name	Grant-maker State	Recipient Name	Recipient City	Year Authorized	Grant Amount	Description
The Rockefeller Foundation	NY	Kenya Information and Communication Technology	Nairobi	2009	\$299,300	Toward developing Shared Services Strategy and Change Management Plan for government of Kenya at city, county and provincial levels, in effort to create more efficient, effective and transparent government service delivery
The Rockefeller Foundation	NY	Kenya Community Development Foundation	Nairobi	2010	\$103,000	For use by African Grantmakers Network toward inaugural Pan African Assembly, which aims to strengthen network of African grantmaking organizations and create common strategy for advocacy of philanthropy within Africa, to be held in Nairobi, Kenya
The Rockefeller Foundation	NY	Kenya Community Development Foundation	Nairobi	2012	\$500,000	For general support of mission to encourage the growth and promotion of organized giving in Kenya
The Rockefeller Foundation	NY	Kenya Community Development Foundation	Nairobi	2012	\$67,500	To administer and award Wangari Maathai scholarship, annual cash award to two female Kenyan students who have demonstrated both academic and extracurricular commitment to environmental stewardship within the urban context
Tides Foundation	CA	WEM Integrated Health Services	Thika	2009	\$9,000	For peer education, psychosocial support, and healthcare training for HIV-positive children and their caregivers
The TJX Foundation, Inc.	MA	African Family Health	Nairobi	2011	\$5,000	
Western Union Foundation	CO	Computers for Schools Kenya	Nairobi	2009	\$49,600	For restricted support
Western Union Foundation	CO	Computers for Schools Kenya	Nairobi	2008	\$33,612	

Source: Foundation Directory Online (Regional Foundation Library, 2014).

Notes

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² Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development, 2011-2025” (Republic of Indonesia, 2011).

³ Ibid., 15.

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⁶ President H. Susilo Bambang Yudhoyono, Declaration made in 2011, MP3EI Preface.

⁷ Pike Powers, “Building the Austin Technology Cluster: The Role of Government and Community Collaboration in the Human Capital,” Proceedings, Rural and Agricultural Conferences (May 2004), 53-71.

⁸ Raymond Smilor, George Kozmetsky, and David Gibson, “Creating the Technopolis: Linking Technology Commercialization and Economic Development” (Ballinger Publishing, 1988).

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¹⁰ W. Soenarso, D. Nugraha, and E. Listyaningrum, “Development of Science and Technology Park (STP) in Indonesia to Support Innovation-Based Regional Economy: Concept and Early Stage Development” (World Technopolis Association, June 2013), 32-42.

¹¹ Strategic Asia, “Implementing Indonesia’s Economic Master Plan (MP3EI),” 12.

¹² Ibid., 16-38.

¹³ Ibid.

¹⁴ Steven Feinson, “National Innovation Systems Overview and Country Cases, in Knowledge Flows, Innovation, and Learning in Developing Countries” (The Center for Science, Policy, and Outcomes at the Arizona State University, 2003), 13-38.

¹⁵ Coordinating Ministry for Economic Affairs, “Masterplan for acceleration and expansion of Indonesia economic development.”

¹⁶ Asia Pacific Economies Blog, “Indonesian Economic Statistics,” Jan. 31, 2014, retrieved from <http://apsecsec.org/indonesia-economic-statistics/>.

¹⁷ “World Development Indicators” (Washington, D.C.: The World Bank, 2012), retrieved from <http://data.worldbank.org/data-catalog/world-development-indicators>.

¹⁸ Diana Sari, “The Use of ICT by Business Sector in Indonesia” z911th World Telecommunications/ ICT Indicators Symposium, Mexico City, Mexico, Dec. 4-6, 2013).

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²¹ Tokyo Subejo, “The Performance of Research in Indonesia” (The Jakarta Post, July 2, 2010), retrieved from <http://www.thejakartapost.com/news/2010/07/02/the-performance-research-indonesia.html>.

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²⁶ Bandung Digital Valley, “About Us” (Bandung Digital Valley, 2015), retrieved from <http://bandungdigitalvalley.com/>.

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³³ Raymond Smilor, David Gibson, and George Kozmetsky, “Creating the Technopolis: Linking Technology Commercialization and Economic Development” (Journal of Business Venturing 4, 1988), 49-67.

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